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Suicide-Related Ideations and Behaviors in Adolescence: Exploring Predictors in Middle Childhood

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Suicide-Related Ideations and Behaviors in Adolescence: Exploring Predictors in Middle Childhood

by

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Dedication

This dissertation is dedicated to those young people who at some point have felt disconnected or alone and to the teachers, psychologists and professionals who have reached their hand out to help.

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Suicide-Related Ideations and Behaviors in Adolescence: Exploring Predictors in Middle Childhood

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Supervisor: Chris McCarthy and Lynn Rew

The purpose of this study was to determine whether or not risk and protective factors (socioeconomic status, social connectedness, negative reactivity temperament, approach/withdrawal temperament, social acceptance competence, behavioral conduct competence, and global self-worth) measured in middle childhood would statistically predict the prevalence of suicide-related ideations and behaviors in high school. This study highlights the importance of examining a population of this age range prior to entering a critical developmental stage, shown to be at increase the risk for suicide. Due to the growing rates of suicide in adolescence, the objective is for this population to be regarded as a main target of future suicide prevention and intervention techniques. As such, the current study examined specific risk and protective factors in middle childhood with the goal to help identify a profile for adolescents in high school at risk for future suicide-related ideations and behaviors or to determine those who have developed protection against this health-risk behavior.

The sample for this study was taken from two larger longitudinal studies with student participants from three rural school districts of central Texas. The data were analyzed using binary logistic and multiple linear regression analysis. While the findings

of this study revealed statistically significant relationships between three out of the seven predictive variables (self-connectedness, global self-worth, and behavioral conduct competence), the results were not robust. Given the minimal significance of these exploratory findings, further analysis is suggested before development of intervention programs is warranted.

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CHAPTER ONE: INTRODUCTION

The problem of youth suicide has drawn national attention and is a major public health concern. According to the Centers for Disease Control and Prevention (CDC), youth suicide is the third leading causing of death among 10-24 years olds. (National Center for Disease Control and Prevention assessed July 2009). Data from the CDC's nationwide Youth Health Risk Behavior Survey of students in grades 9-12, reported that 15% of students seriously consider suicide, 11% reported making a plan, and 7% reported a previous suicide attempt within 12 months preceding the survey (Eaton, et al., 2008). While death by suicide is ultimately a low base rate for children these numbers translate to, in a given year, a high school class of 30 students, 6 will seriously consider suicide, 2 to 3 will attempt suicide and 1 will make an attempt sufficiently harmful to require medical attention (Lieberman & Miller, 2007).

Trends indicate that the largest percent increase in rates of suicide from 2003-2004 was among females, specifically aged 10-14 years (75.9%) and next females aged 15-19 years (32.3%) (Lubell, Kegler, Crosby, & Karch, 2007). The dramatic rise in suicide among girls in the two younger age groups suggests a change in the risk factors and more accessibility of methods used for this population. Lubell and colleagues (2007) propose that there is little known about the risk factors for young females due to the fact that much of the prior research on youth suicide has emphasized males. They report the information that does exists on females, has mainly focused on suicidal behavior related to suicidal ideation and self-inflicted nonfatal injuries. Despite this significant trend there appears to be a gap in the research about risk factors for young females who have completed suicide.

Interventions geared toward youth range from screening adolescents in the emergency room to school based programs. A pilot study created to detect suicide screened all adolescents entering the emergency room regardless of the presenting complaint. Results from this pilot study suggested that continued use of the 4-item Risk of Suicide Questionnaire, is beneficial to identify those at imminent risk for suicide (Foise, Eich, Hall, & Ruppman, 2006). Other methods include a school-based intervention founded in California which created a curriculum to train high school students to recognize signs and symptoms of potential suicide crisis among their peers (Nelson, 1987). Evaluations from this school based program suggest that future programs should include a psycho-educational component on symptoms of a suicide crisis. Research suggests that results from this California program and other school based programs, which include brief intervention approaches for suicide vulnerable youth in high schools, appear to have efficacy (Thompson, Eggert, Randell, & Pike, 2001). School based interventions seem to reinforce the role the school has to identify possible at-risk students, respond, and educate (Kalafat & Elias, 1995). Research on school based programs suggests that the majority of efforts are geared toward high school settings and therefore opportunities to reach high risk students as early as elementary and middle school can be overlooked.

Despite increasing concerns over suicide in adolescence, little is known about how to identify childhood risk for later developing suicide-related behaviors prior to the occurrence in high school. Furthermore, defining the construct of suicide in youth has proven to be difficult and lacking in consistency and clarity (Rudd 2004). In regards to therapeutic treatments, research suggests that effective treatments will vary per adolescent and also under varying conditions (Rudd & Joiner, 1998). Research suggests that while completed suicide is rare for children, the risk grows with increasing age and

hence much of the prevention focus has been concentrated on adolescents (Pelkonen & Marttunen 2003). Furthermore, for preventions to be efficacious, more knowledge about risk factors for adolescent suicide is necessary. Research has cited that risks for suicidal behavior is multifaceted and includes factors such as family-related domains, psychosocial characteristics, psychiatric disorders, and other health risk behaviors (Bridge, Goldstein, & Brent, 2006, Pelkonen & Marttunen 2003; Capuzzi & Gross, 2008). However, much of the literature efforts has focused on the risk factors for suicide while overlooking the protective factors. Research suggests that increasing protective factors may actually be more effective for suicidal children and adolescents than reducing the number of risks (Capuzzi & Gross, 2008).

Our knowledge and understanding of the risk factors and also protective resources for suicidal behaviors is important for several reasons, including helping clinicians with risk assessment, designing evidence based suicide prevention and early prevention programs, understanding etiology of suicide attempts for focusing the development of evidence based mental health policy, and because suicide attempt is the strongest predictor of future completed suicide. (Donald, Dower, Correa-Velez, & Jones 2006).

In the current research study, the investigation will draw on longitudinal data gathered over the course of several years in order to further examine how risk factors and protective resources are associated with the development of the health risk behavior of suicidal ideation and suicidal behaviors in youth. The purpose of the current study is to widen prior research on this multifaceted prospective data source and examine if certain risk and protective factors are predictive of engagement in suicidal ideation and behaviors, years later in adolescence.

This study was guided by the Youth Resilience Model (Rew & Horner, 2003). This conceptual model reflects the relationship between risk factors at the individual,

family, and community level with protective resources, and health behaviors. Further discussion of this theory and how it is integrated into the conceptual framework of this study is presented in Chapter Two.

CHAPTER TWO: LITERATURE REVIEW

The review of the literature considers theory and knowledge associated with the purpose of this research-to better understand the dominant discourse in beliefs about what predicts or protects from suicidal ideation and behaviors as it occurs among school age youth. The literature review connects specific aspects of the dissertation to a larger research context. The review is organized into four main sections.

Section One provides an overview of two extensive broad studies through which the current study developed. The basis of the dissertation is from a longitudinal health study of school age children which aims to compare their risk and protective factors and health-risk behaviors and identify how variables predict health-risk behaviors through adolescence. Suicide was one of many health-risk behaviors examined in these larger studies. This section will also address the specific terminology that relates to suicidal ideation and behaviors as well as the epidemiology of youth suicide.

Within this context, Section Two examines theory related to the conceptualization of suicidal ideation and behaviors in children and adolescence. The theory that guides this study is based on a resilience model. Integral to the study is recognizing the public health concern, that suicide in youth has become, and addressing the possible factors or resources that may contribute to suicidality in youth. This section will examine the importance of recognizing the youth-risk behavior of suicidality and focus on the nature of risk for suicide on individual and sociocultural contexts for the development of appropriate interventions related to the discussion of risk and vulnerability for suicide.

Section Three turns to research in order to examine specific predictors that the current study explores, including socioeconomic status, social connectedness,

temperament, and competence. The study will examine how and if these childhood risk and protective factors relate to suicidal behaviors in adolescence.

Finally, Section Four synthesizes the previous three sections and introduces the main thrust of the study, determining how specific variables of socioeconomic status, social connectedness, temperament, and competence have an impact on positive suicidal behaviors in high school, therefore, specific prevention and intervention models can be developed that may work with populations as early as middle adolescence. Additionally, study aims and associated hypothesis as well as empirical support for the addition of predictor variables are presented in section four.

SECTION ONE: SUICIDE AS A HEALTH RISK BEHAVIOR

This section provides an overview of the larger longitudinal studies funded by the National Institute of Health. These studies were developed by researchers at The University of Texas School of Nursing with the goal to fill in research gaps regarding the development of health-risk behaviors in adolescence especially among Hispanics. The current research consensus states that health risk behaviors of adolescents can be predicted by health behaviors of school aged children (Rew, Horner, & Fouladi 2010). The longitudinal studies developed by these researchers focused on exploring the links and interactions of health behaviors in school aged children and followed them as they matriculated in adolescence.

Data for the larger longitudinal studies has been collected annually with the intention of examining how health behaviors develop beginning in childhood amidst the interplay between risk factors and protective resources. Among the multiple health risk behaviors that were measured, the current study will specifically examine the health risk behavior of suicide-related ideations and other suicide-related behaviors which may

include developing a plan and/or making a suicide attempt. The resultant collection of data can assist in our ability to explore and identify early risk factors for suicidal ideation and behaviors of school age youth through adolescence. This will hopefully provide a better appreciation of the significance of protective resources as it applies to school age children and how future appropriate interventions can be developed.

A Longitudinal Study of Health Risk Behaviors of Youth (Long Herby)

The original study, The Longitudinal Study of Health Risk Behaviors of Youth (known as Long Herby), utilized a cohort-sequential design in a large, multi-ethnic sample of rural youth. Beginning in 2002, Long Herby set out to explore which set of risk factors and protective resources, in school aged children from 4th through 6th grades, are predictive of health-risk behaviors in early adolescence (7th and 8th grades). Health-risk behaviors refers to those behaviors that threaten health, development and well-being of adolescents such as smoking, drinking, using illegal drugs, engaging in unprotected sexual activity, and carrying weapons. Research has suggested that engaging in health-risk behaviors tend to increase with age and consequently increases the likelihood of mortality in the second decade of life (Rew et al., 2010; Cartland, Ruch-Ross & Henry, 2008). Some of the risk factors that were measured in this group of school aged children (4th -6th grade) included demographic information, measures of temperament, perceived stress, levels of acculturation, family constellation, and neighborhood quality. The protective resources that were measured in this group of school aged children (4th -6th grade) included measures of coping, humor, social connectedness, school engagement, and perceived competence. Health-risk behaviors that were surveyed annually included sexual activity, tobacco use, alcohol and substance use, dietary behaviors, physical activity and behaviors that lead to intention or unintentional injury (IRB grant 2001).

Developing Health Behaviors in Middle Adolescence (DHBMA)

The Long Herby study was extended in 2004 to Developing Health Behaviors in Middle Adolescence (known as DHBMA). The DHBMA study was created to continue researching change in health-risk behaviors for adolescence as well as explore the development of health-promoting behaviors through high school (9th-12th grade). The DHBMA study retained the same population of children who had participated in the earlier cohorts of the Long Herby study. By using a cohort-sequential design, the DHBMA study permits the examination of the development of health-promoting and health-risk behaviors in adolescence. Risk and protective variables were measured annually. Risk factors that were measured in the DHBMA study included demographic information, measures of life changing events, peer influence, academic status, and adolescent's use of mass media (e.g. TV, DVD, magazines, and video game consoles). Protective resources that were measured in the DHBMA study included measures of religious commitment, parental monitoring, competence, parent-adolescent communication, and social connectedness. Health behaviors were examined as well as health promotion behaviors, and motivations for health behaviors were also studied. Health-risk behaviors that were examined included behaviors that can cause harm; intentionally or unintentionally. A critical feature of the DHMA study was that it asked adolescents about suicidal ideation and suicide-related behaviors as part of the measure of health-risk behaviors.

The Long Herby study's basis has underpinnings in Rutter's resilience framework. Rutter (1987) proposed that resilience represents a dynamic process between risk factors and protective resources at the individual level. Continuing to build on Rutter's research, The Youth Resilience Model developed by Rew and Horner (2003) reflects a developmental model that guided these longitudinal studies. Rew and Horner

(2003) concur that resilience is an interactional process between risk factors and protective resources at many levels including individual, family and the community. They conclude that despite certain risk factors, which can directly lead to harmful health outcomes for children, the activation of protective resources at the individual, family, or community levels can mediate or moderate their influence to have an effect over time.

Research, including the Long Herby and DHBMA studies, reinforces the growing importance of identifying patterns of risk and protection for children over time as they relate to future positive and negative health behaviors. Broad longitudinal research studies such as Long Herby and DHBMA influence the current study with a research design that investigates factors identified earlier in development. These potential factors could lead directly or indirectly to future health behaviors for adolescents. The health behaviors that this study will center its focus on, relate specifically to the concept of suicide in adolescence including suicidal ideation, plans and/or attempts.

Descriptive Epidemiology

According to research by Apter (2010) suicidal behavior in adolescence covers a wide range of phenomena and the ability to identify precise definitions about this topic remain controversial. Through standardized assessment, researchers hope to bridge the gaping holes in trying to classify definitions of suicidality. For example there exist questions about classifying the range of suicidal behavior; such as, are suicidal gestures more serious than suicide ideation? Or is a low-lethal suicide attempt more serious than a suicidal gesture? (Apter, 2010). There has been minimal standardized assessment in this area which addresses these types of questions and the lack of any clear definitions on suicidal behavior have specifically hindered research in the area of adolescent suicide. It appears the only publication thus far that discusses this problem is from Posner and

colleagues in which researchers described The Colombia Classification Algorithm of Suicide Assessment (Posner, Oquendo, Gould, Stanley, & Davis, 2007). The scale is a standardized suicidal rating system providing data for the pediatric suicidal risk analysis of antidepressants conducted by the Food and Drug Administration. Therefore the lack of standardization suggests further research in this area is needed to contribute to understanding risk factors associated with suicide.

The expression suicidal ideation is defined as thoughts of wanting to harm or kill oneself (O'Carrol, Berman, Maris, et al., 1996). Classification of this definition has been revised by Silverman, Berman, Sandaal, O'Carrol, and Joiner (2007) as suicide-related ideations which they conceptualized as an example of "weighing options" (p. 267). Additionally, Silverman and colleagues define the term suicide as "a self-inflicted death with evidence (either explicit or implicit) of intent to die" (p. 273). Suicide-related communications is a broad category of verbal and nonverbal communication which includes a suicide threat or a suicide plan. Suicide-related behaviors include "self-harm, self-inflicted unintentional death, undetermined suicide-related behaviors, self-inflicted death with undetermined intent, suicide attempt, and suicide" (p. 272). And accordingly, the term suicide attempt is defined by these researchers as "self-inflicted, potentially injurious behavior with a nonfatal outcome for which there is evidence (explicit or implicit) of intent to die" (p.273). Under the umbrella of suicide-related ideations and behaviors, Silverman et al., included suicide related ideations, suicide related communications (ie. plans, notes etc.) and suicide-related behaviors (ie. self harm or attempt). For the purposes of this study, one term will cover the spectrum of suicidality. Suicide-related ideations or behaviors will be used when referencing adolescents' positive self-reports of suicidal thoughts, plans or attempts. Utilizing these definitions,

the chapter continues with reporting the prevalence estimates of suicide-related ideations and behaviors.

Suicidal Ideation

The rate of suicide-related ideations in adolescence is common. Incidence rates from the Youth Risk Behavior Survey (YRBS), a national high school-based sample suggest that 13.8% of students in grades 9-12 seriously considered suicide in the past year (Centers for Disease Control and Prevention (CDC), MMWR 2009). Females in the United States have much higher rates of suicide-related ideations than males (Gould, Greenberg, Velting, & Shaffer, 2003). Again based on the 2009 YRBS, 17.4% of females and 10.5% male students seriously consider suicide (CDC).

Suicide Attempts

Estimates of lifetime suicide attempts nationwide one or more times within the last year is 6.3% of students and was higher for females (8.1%) than males (4.6%) (CDC 2009). The rates of suicide requiring medical attention range from 1-3% which is consistent with the 2009 YRBS survey which found 1.9% of students nationwide made a suicide attempt that resulted in needing medical attention (Grunbaum, et al., 2004). History of suicide attempt has long been considered the main predictor of future suicide attempts among clinical samples of adolescents (Miranda, et al., 2008; Pfeffer, et al.,1993; Lewinsohn, Rhode, & Seeley, 1994). Research suggests that the increased risk for future suicide attempts is conferred by a history of psychiatric conditions such as anxiety disorder and the intent to die at the time of attempt (Miranda et.al 2008).

Completed Suicide

According to the World Health Organization statistics worldwide, countries in the Russian Federation and former Soviet states as well as New Zealand, Finland and

Ireland are especially high (Bridge et. al. 2006; World Health Organization(WHO) 2002; Pelkonen & Marttunen 2003). Although research indicates that completed suicides among children and young adolescents are a fairly rare occurrence, the statistics indicate that suicide rates increase sharply with age (Bridge, et al., 2006; WHO, 2002). Several theories have been generated from research as to why suicide rates increase with age. Some research suggests there is a greater prevalence of psychopathology in adolescents specifically mood disorders and substance abuse (Bridge et al., 2006; Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Shaffer, Gould, Fisher, Trautman, Moreau, Kleinman, et al., 1996). Furthermore, due to their cognitive development, adolescents are more able to plan and carry out a suicide than younger victims (Brent, et.al. 1999; Bridge et. al 2006).

Gender and Ethnic Difference

In the United States rates of suicide deaths are much higher among males (Gould et.al 2003). The higher percentage of suicide death for males can be attributed to differences in methods of suicide. Males more commonly use violent and lethal methods such as guns, whereas females more commonly use less lethal methods such as overdoses (Brent et. al 1999).

Conventionally, in the United States there have been strong ethnic differences in complete suicide rates for adolescents, with completed suicide being more common among Caucasians (Bridge, et al., 2006). But with respect to suicidal ideations, race and ethnicity appear to have a larger effect. Hispanic adolescents have shown a tendency to be at a greater risk for depressive symptoms, suicidal ideation, and suicide attempts compared to other adolescents (Duarte-Velez & Bernal, 2007). Research suggests that specifically Latina females are at an even greater risk. In a study which explored ethnic

differences in recent self-reported suicide attempts among three ethnic groups, results found that a higher percentage of Hispanic girls reported recent suicide attempts than did Caucasians (Rew, Thomas, Horner, Resnick,& Beuhring, 2001). More research is needed in order to explain the significant difference, however, thus far theories have postulated that the high rates of attempted suicide among Latina can be attributed to sociocultural environment, cultural beliefs, gender roles, and family traditions (Zayas, Lester, Cabassa, & Fortuna, 2005). Moreover, research indicates that rates of attempted and completed suicide are also particularly high among Native Americans (Borowsky, Resnick, Ireland, & Blum, 1999). And according to the CDC among American Indians/Alaska Natives ages 15-34, suicide is the second leading cause of death. Theories explaining this trend suggest loss of traditional cultural practices, intergenerational conflict, and increased sense of alienation has contributed to the high suicide rates.

SECTION TWO: THEORETICAL FOUNDATION

Research has examined adolescent suicide through a variety of lenses including developmental and sociocultural. Through these lenses, research continues to piece together research questions that concentrate efforts on identifying the predictors that lead to suicidal behaviors or suicide. The current study attempts to address the research question regarding the specific individual risk factors and protective characteristics that affect a specific health-risk behavior of suicide. Furthermore, this study looks at whether middle childhood factors can predict events in adolescence. A major school of thought that directs the conceptual framework serving as the foundation for this study is the Youth Resilience Framework (Rew & Horner, 2003). This model was briefly explained in section one of the present literature review. The Youth Resilience Framework represents the position that individual, family, and community risk and protective factors

in childhood can promote or hinder a wide array of health outcomes in adolescence, including suicidal behaviors.

The Youth Resilience Framework

The Youth Resilience Framework developed from Rutter's (1985) research on resilience in the face of adversity. Rutter conceptualized resilience as a relationship between factors that increase vulnerability and resources that protect an individual from adverse outcomes. Rutter (1885) asserted that individuals will vary in response to risk. Those children and adolescents that display desired outcomes even in the face of adversity or increased risks are labeled as "resilient". This means that children coping with adverse situations may lead to the acquisition of new problem-solving skills or develop new strategies that could influence their resistance to future stressors. Rutter (1985) hypothesized that learning how to deal with life changes and stressful situations is influenced by early childhood experiences. Therefore, encountering adverse situations is not inherently a risk factor but learning to overcome and acquiring new skills in response to the adverse situation is what makes one resilient. Accordingly, Rutter (1985) also emphasized that resilience does not mean avoiding stressors but rather acting towards stress in a way that allows for an efficacious response to the stressor.

As a continuation of resiliency, Rew and Horner (2003) developed the Youth Resilience Model to address individual as well as sociocultural risk factors and protective resources that affect health outcomes in adolescence. This model recognizes that risk factors and protective resources are present throughout an individual's life. The sociocultural context means adolescents' communities; adolescents' families, schools, and peers may play a part in their health-risk activities such as suicidal ideations and behaviors.

The importance of positive family functioning to promote healthy adolescents' functioning is a belief supported in research, evidenced in a study of 230 Finnish adolescents in 7th through 9th grade (Rask,Astedt,-Kurki, Paavilainen, & Laippala, 2002). The purpose of that study was to examine the relationships between adolescents' subjective well-being and family dynamics as perceived by the adolescents. The adolescent's perceptions of well-being were measured and results showed that adolescents who perceived their relationship with their parents to be poor reported more self-esteem issues, feelings of pessimism, and depressive systems compared to those adolescents who had a positive perception of their family relations (Rask et al., 2002). Other research supporting the findings of Rask and colleagues has reported that suicidal adolescents perceived more problems than non-suicidal adolescents on multiple dimensions within their family including difficulty adapting to change, enmeshment, and poor problem solving abilities (Stein, et.al 2000). Family communication also plays a role in increasing the risk for suicide among youth. Poor communication with mother and father, a family history of suicidal behavior and parental problems with police were reported as the major family-related psychosocial factors increasing suicide vulnerability (Gould, Fisher, Parides, Flory, & Shaffer, 1996).

An additional facet of the Youth Resilience framework centers on the important role that an adolescent's community plays as a part in their health activity. Research has found that neighborhood resources such as churches, recreational centers, and schools can have a significant impact on healthy functioning. Specifically, those neighborhoods with fewer resources appear to impact levels of functioning for adolescents (Werner 1989). Moreover, in a longitudinal study that examined predictors of youth violence among mainly Hispanic immigrant populations in Northern California, the structure of the neighborhood, such as the liquor store availability is more indicative of when youth

violence occurs than the ethnicity of its citizens (Alaniz, Cartmill, & Parker, 1998). This study found that protective factors for this population against violence were the presence of role models with professional careers. The study results suggested that youth violence prevention efforts should be focused on examining the structure of their neighborhood environment and change at a policy level.

Another sociocultural factor that plays a part in the youth resilience model is peer relationships. Strained relationships with peers and problems in school have been associated with adolescent suicide-related behaviors. As an illustration, Resnick and colleagues (1997) established that adolescents who are disconnected from their school have poor academic performance. Those students who repeated grades are more likely to engage in a cluster of health-risk behaviors compared to those students who managed to maintain well connected in school. These researchers established from their study on a large national sample of adolescents that poor school performance was linked to interpersonal violence, suicidality, use of cigarettes, alcohol, and marijuana (Resnick et al., 2007). Furthermore, according to Duncan and colleagues (2000), their findings concluded that adolescents who spent time with an older deviant peer group, exhibited more behavior problems as they aged.

As Rew and Horner (2003) stated, the Youth Resilience Model examines risk factors and protective resources from a sociocultural and individual context that can promote or hinder adolescent's level of functioning. On the individual level, some risk factors that can promote or hinder and adolescent's level of functioning include temperament and distress. The Youth Resilience Model, acknowledges that while everyone experiences stressful events, if the events are beyond their tolerance and capacity to respond appropriately, then distress occurs. More importantly, each child appraises an experience or event as stressful based on an individual level. Temperament

will be specifically addressed with this study and the literature regarding this factor will be focused on in section three.

There is little known research on what the protective resources are for suicide compared to the research that exists for the risk factors (Capuzzi & Gross, 2008). But according to Haley (2004) increasing protective factors may be more effective than reducing the number of risk factors for a suicidal client. Individual protective resources that are addressed in the Youth Resilience framework include a sense of humor and religiosity. There is no research to date on the role of humor as a protective factor for adolescents. But competence and connectedness are also considered protective resources included in the Youth Resilience framework (Rew & Horner 2003). Each of these factors will be further addressed with this study and elaborated on in section three of the literature review.

Thus, common to the resilience theory is a concern for the dynamic process between vulnerability factors and protective resources of the individual and also sociocultural contexts. The confluence of risk factors and protective factors over time may contribute to health-risk behaviors in adolescence including suicidal ideation and/or behaviors.

SECTION THREE: INVESTIGATING RISK FACTORS AND PROTECTIVE RESOURCES

This section presents the risk factors and protective resources that are relevant to the Youth Resilience Model guiding this study. Several other factors have been associated with suicide-related ideations and behaviors in adolescence; however these factors are beyond the scope of this dissertation and accordingly will not be presented. Examples of other risk factors include psychiatric comorbidity, parental psychopathology, previous history of sexual abuse, and alcohol use. Examples of other

protective resources not addressed in this study include religiosity, emotional well being, and problem solving skills (Capuzzi & Gross 2008). For the proposed study, risk factors and protective resources were selected on the basis of research and theory which link these factors to suicidal behavior. The goal of examining the role of young people's childhood experiences in predicting later risks of suicide-related ideations and behavior measures is for future prevention and intervention strategies.

Risk Factor: Socioeconomic Status

Research has indicated that socioeconomic status (SES) contributes to health disparities but determining at what level has been difficult to decipher because of inconsistent measures of socioeconomic status (Shavers 2007). Mueller and Parcel (as cited in Shavers, 2007) defined SES as "the relative position of a family or individual on a hierarchical social structure, based on their access to or control over wealth, prestige and power" (p.1013). According to Shaver some of the methodological issues associated with collecting data on SES include lack of reliable measures, difficulty with collecting data because of non-responses, measurement effects of SES over course of the lifetime, classification of specific populations, poor correlation between SES measures and population groups, and a likely inaccurate interpretation of results. Typical compositional measures of socioeconomic status include occupation, education, and income. Contextual measures of SES include examining variable such as regions, states, and even neighborhoods.

Living in disadvantaged neighborhoods is thought to lead to risky health behaviors such as delinquency and substance abuse which in turn are risk factors associated with youth suicide (Duncan et al., 2000). Some theories suggest that youth in disadvantaged neighborhoods experience more stressful life events that can affect an

adolescent's mental health such as substance use, intimidation, exposure to violence (Dupere, Leventhal, & Lacourse, 2009). As an example, ethnographic theoretical research from Heimer (1997) linked lower socioeconomic status with parenting styles (e.g. power-assertive) which can increase likelihood for minimal supervision of children and therefore also have more opportunities to engage in aggression and violence.

Furthermore, adolescents in disadvantaged neighborhoods are also more likely to engage in problematic behaviors such as delinquency and substance abuse, perhaps because illicit substances are more accessible in neighborhoods of lower socioeconomic status (Duncan et al., 2000). Moreover, exposure to suicide is a risk factor for adolescents, and epidemiological studies have thus shown that suicides tend to concentrate in disadvantaged areas (Dupere et al., 2009). Perhaps more importantly, youth who live in areas of lower socioeconomic status, have limited access to support and coping resources such as churches and other organizations. However, there is limited concrete evidence that demonstrates any effects of neighborhood poverty on suicidal behaviors in adolescents. Accordingly, in a study of youth suicide, Eckersley and Dear (2002) examined 32 socioeconomic and cultural variables in mostly Western nations. They found that cultural factors were more significantly associated to youth suicide than socioeconomic factors of unemployment, divorce, and poverty were. However, researchers did determine a significant association between female youth suicide and unemployment (Eckersley & Dear, 2002). Furthermore, it appears that lower socioeconomic status or disadvantaged neighborhoods do not always appear to be associated with an increased risk for suicide. As evidenced in a study by Levy, Jurkovic, and Spirito (1995), higher socioeconomic status was related to more severe suicidal intent among adolescent suicide attempters. In summary, there is a paucity of consistent

research on the role socioeconomic status has in association with adolescent suicide-related ideations or behaviors.

Risk Factor: Temperament

Another risk factor for suicidal behavior may lie in the structure of an individual's personality. According to the work of Rutter, children's temperament can predict future behavior (1987). Clinical research suggests a link between suicidality and 'extreme' personality profiles (Street & Kromrey, 1994). As an illustration, research found that three year-olds with difficult personalities were more likely to attempt suicide as young adults (Caspi, Moffitt, Newman, & Silva, 1996). In a similar finding examining risk behaviors, Caspi and colleagues (1995) determined through a longitudinal study on temperament stability, that children beginning at age 3 and followed to age 15, with difficult temperament styles were associated with antisocial behaviors in adolescence.

McClowry (1995) defines temperament as a pattern of behavioral responses or a predisposition to respond in certain ways to certain situations (McClowry, Hegvik, & Teglasi, 1993). Based on her prior research she defined four dimensions of temperament. Negative Reactivity was conceptualized as the frequency with which a child expresses negative emotion. Task Persistence was the degree of self-direction that a child exhibits in fulfilling tasks. Approach/Withdrawal temperament was the child's initial reaction and response to new people. Activity was conceptualized as large motor activity (McClowry 2002). Therefore, the effects of temperament rely on social meaning and environmental messages. It is not simply the child's temperament that plays a part in whether they are vulnerable for behaviors problems, but rather the interaction between the child's temperament and environmental demands for behavior that could lead to future behavior problems (McClowry et al.,1993; Rew & Horner 2003). As an example, youth who are

more flexible to situations have significantly fewer problems at home or school than those children who do not respond well to the demands of others (Rew & Horner, 2003).

This view of temperament is consistent with the "goodness of fit model" first proposed by Thomas and Chess (1977). Goodness of fit was originally theorized to produce optimal development and was eventually proposed to increase trait consistency from childhood temperament to adult personality (Roberts & DelVecchio 2000; Wachs 1994). Goodness of fit results when expectations and demands of the environment are consistent with an individual's "own capacities, characteristics, and style of behaving" (p.11). In other words, children with temperaments that match their environment might bring about consistent measures from their caretakers and other aspects of their environment.

Research in Hungary aimed at linking specific negative temperament to suicidal behaviors in a sample of children ages 7-14 of who had been previously diagnosed with major depressive disorder (Tamas, et al., 2007). In regards to their finding, results suggested depressed children that exhibited suicidal behaviors consistently reported higher scores on Maladaptive and lower scores on the Adaptive emotion regulation scale. This profile suggests that a child who demonstrates many maladaptive ways in regulating affect and is likely to be a child with definite suicidal behaviors. However, due to methodological limitations, results did not confirm their hypothesis stating a high level of negative trait emotionality is associated with suicidal behaviors. Because the study by Tamas et al. utilized a cross-sectional design they could not prove that aspects of temperament and maladaptive emotion regulation preceded or were related to suicidal behaviors. Temperament is believed to develop early and a substantial amount has been reported to remain stable over time (Calati, et al., 2008). The lack of significant findings suggests longitudinal research is needed to verify any potential contribution temperament

has to depressive symptomology, such as suicidal behaviors. The need for more longitudinal research was confirmed in a systematic review of the literature by Brezo, Paris, and Turecki (2006). These researchers raise the issue that more longitudinal studies, in younger age group because personality was still being developed, were needed to determine how many individuals with suicidal tendencies have had extreme personality traits with or without psychopathology (Brezo, et al., 2006). In conclusion, the need for further research utilizing longitudinal methodology is critical to determine what effect childhood temperament plays on future suicide-related ideations and behavior.

Protective Resource: Social Connectedness

Social ties and social isolation have been well established to have effects on mental health and well-being dating back to Emile Durkheim's seminal work in sociology (1951). He argued that stable levels of social integration would buffer against suicide. Years later, research by Barnett and Gotleib (1988) stated that a lack of social networks, close friends and an individual's perceived availability of social support can be linked to depressive symptoms

In previous research of a sample of Australian young adults done by Donald and colleagues (2006), social connectedness was found along with problem solving confidence and internal locus of control to be protective factors against suicide attempt in a population of 18-24 year-olds. Donald et al., (2006) concluded that a young adult's interpersonal relationships are crucial in determining risk for medically serious suicide attempts. While there is a well established link between social integration and physical health, this study by Donald et al. elucidated a link between social integration and mental health. They concluded there exists a direct link between social connectedness and a

lower risk of suicidal behaviors, and specifically, that social connectedness would protect against suicide attempts among those with higher levels of depressive symptomology. These findings lend support to the idea that social connectedness has a buffering effect for such adversities as depression and future suicide attempts. This premise was first coined by Cohen and Willis (1985). They concluded that social support buffers against stressful life events, known as the stress buffering model.

Research by Bronfrebrenner (1979) concluded that a child's microsystems, which includes family or peer group, play a major role in their adjustment. According, to this view, if these microsystems are dysfunctional or unsupportive then a child is at the greatest risk for negative developmental outcomes. In assessing social support of elementary school children, Dubow and Ullman (1989) determined that as adolescents interact with their microsystems, he or she develop perceptions of being valued or cared for and supported in their relationships or of being unsupported and rejected in their relationships. In support of this social ecological view, research done by Frauenglass and colleagues (1997) on 8th grade students in Miami, found that levels of supportiveness in the adolescent-parent dyad can decrease the level of substance abuse despite the influence of peer deviance. Moreover, caring relationships between children and adults is known to foster resiliency among adolescents. Resiliency research done by Resnick et.al (1997) determined that resiliency was positively associated with social connectedness. Specifically, that family and school connectedness are the most important factors that influence adolescent risk-taking behavior and protecting youth from every health risk taking behavior including suicide. For example, Joiner's (2005) interpersonal-psychological theory of suicidal behavior proposes individuals will not die by suicide unless they perceive they are a burden to friends, family, or society and also because they possess a low sense of belongingness. Joiner, Van Orden, Witte, Selby, Ribeiro, Lewis, et

al., (2009) define a low sense of belonging as meaning "that one is alienated from others, not an integral part of a family, circle of friends or other valued group" (p. 635). Joiner further defined a low sense of belongingness as a fluid construct which can be changed. He proposed that school suicide prevention programs targeting failed belongingness in students, is a way to intervene with high risk populations (Joiner 2009). Furthermore, in research examining peer group membership in adolescents, researchers found that adolescents who felt they had a positive sense of peer group belonging demonstrated significantly fewer behavior problems than those who viewed peer group membership and belonging as important to them but not available within their social structure (Newman, Lohman, & Newman, 2007). In support of these concepts, findings gathered by Rew, Taylor-Seehafer, Thomas, and Yockey, (2001) on homeless adolescents, suggested that improving social connectedness and feelings of loneliness could be used as interventions to prevent suicide.

In summary, social connectedness has been linked to mental health and well being. Having a strong network of social support can be considered a protective factor against suicide. However, much of the research in support of this contention has been conducted with adults. While there has been research that focuses on how social support is a protective factor against concerns such as substance abuse, little research to date has been able to assert that social connectedness protects against suicide for school aged youth.

Protective Resource: Competence

Longitudinal studies of resilient children have found that despite risk factors, including poverty, parental psychopathology, or disturbance within the family unit, some children can still mature into competent adults (Werner, 1989). Protective resources that

have been identified as central among resilient children include social competence and social connectedness (Garmezy & Masten, 1991; Werner, 1989).

Competence in children and adolescents includes social skills, scholastic ability, physical ability, as well as an overall sense of self-worth (Harter, 1982). Researchers propose that fostering skills that enhance children's competence can influence their resilience (Stewart, Reid, & Mangham, 1997). Illustrating the role competence has in future health behaviors, a study of 849 suburban junior high students in New York set out to examine the mechanism by which competence may be a protective resource against substance abuse (Griffin, Scheier, Botvin, & Diaz, 2001). Results from the study, found that well-being mediated the relationship between early competence and later substance use.

On the other hand, lower competence in academic, interpersonal, and work skills contribute to health-risk and other problematic behaviors related to delinquency (Dishion, Loeber, Stouthamer-Lober, & Patterson, 1984). The longitudinal study explored the development of antisocial behavior and followed 10th grade boys with previous criminal offenses. In summary, competence has been linked to feelings of well-being and positive self-esteem and is lower in children who have reported behavior problems or depression (Garmezy & Masten, 1991).

SECTION FOUR: CONCLUSION AND OVERVIEW OF THE RESEARCH STUDY

Limitations with Current Research

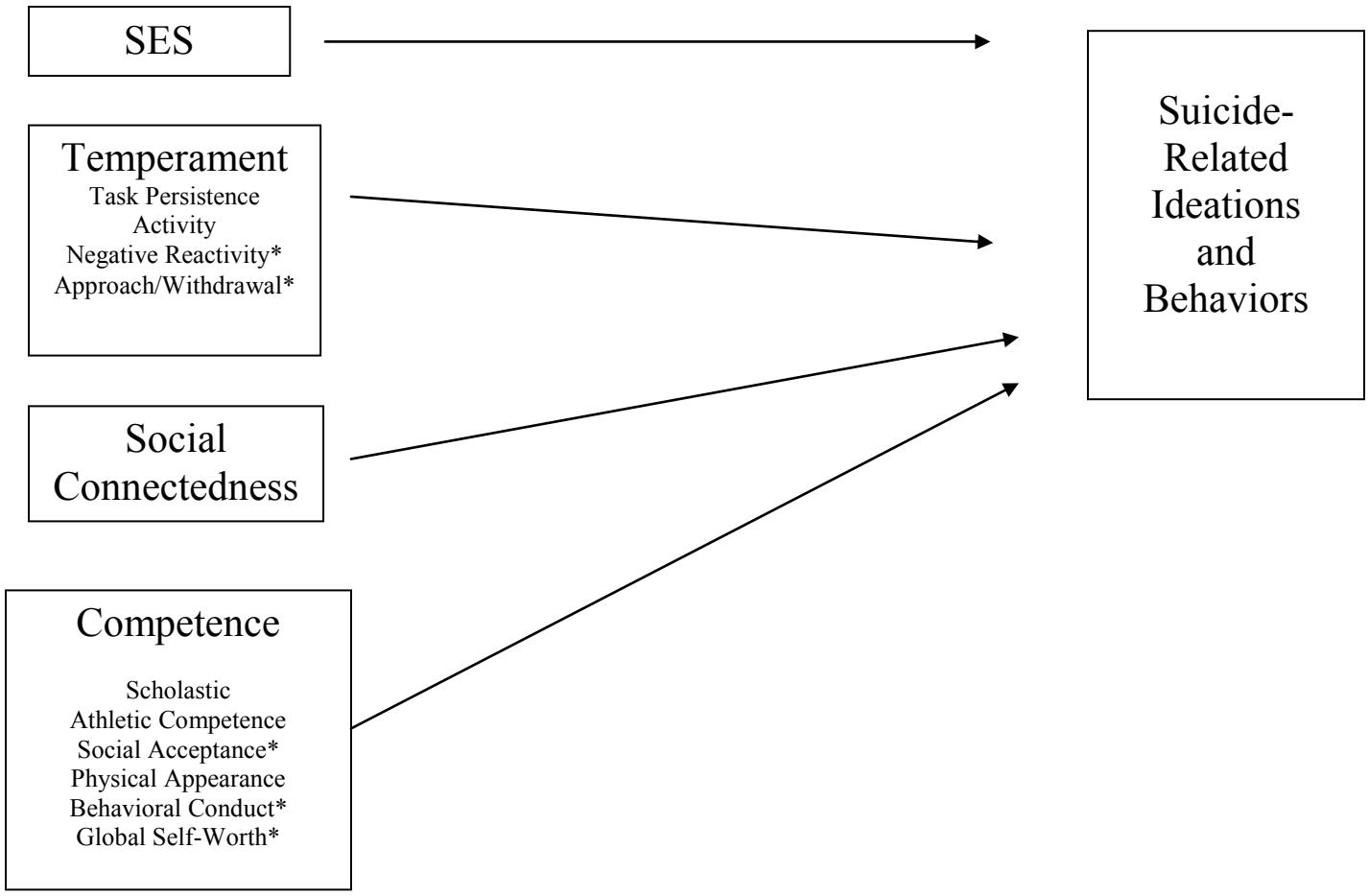
While there has been growing research in the area of risk and protective factors for children and adolescents, with respect to suicide-related ideations and behaviors, the research has limited applicability. Much of previous studies have been marked by methodological issues such as lack of controlled studies and small, highly selected

samples such as hospital inpatient samples (Fergusson, Woodward, & Horwood, 2000). Furthermore, much of the current literature also utilizes cross-sectional research which inhibits the ability to make casual relationships. Current research suggests there is very little known relating to childhood factors for future adolescent suicide-related ideations and behaviors.

The proposed study highlights the importance of studying a group before entering the developmental stage which has been shown to be at an increased risk for suicide. Due to the growing rates of suicide in adolescence, the emphasis is for this population to be regarded as the main target of suicide prevention and intervention techniques (Pelkonen & Marttunen 2003). By examining risk and protective in middle childhood, researchers can potentially identify a profile for adolescents in high school who are either at risk for future suicide-related ideations and behaviors or determine those who have developed protection against this health-risk behavior.

The objectives of the current study are rooted in a theoretical foundation examining how risk and protective factors predict future risk behaviors. The aims of the current research were to examine the predictive utility of specific risk and protective factors from middle childhood and observe which, if any, predicted a risk behavior in adolescence. The current study explored risk factor variables of socioeconomic status and childhood temperament. Additionally, the research examined protective resources including self-competence and social connectedness. These variables are hypothesized to have direct predictive relationships to adolescent risk behaviors of suicide-related ideation and behaviors. Figure 1 provides a diagram of this conceptual framework.

Figure 1: Conceptual Model: Middle Childhood Variables of Socioeconomic Status, Temperament, Social Connectedness, and Competence as Predictors of Adolescent Suicide-Related Ideations and Behaviors



4-6th grades……..…….9-12th grades

STUDY AIMS

The current study is set within the context of a theoretical framework examining how risk and protective factors can be predicative of future risk behaviors as presented in Figure 1-1. The overall goal of this research is to examine the predictive utility of risk variables of socioeconomic status and temperament as well as protective variables of competence and social connectedness predict future behaviors. The chosen predictor variables were measured in childhood and the outcome variable of suicide-related ideations and behaviors was measured in high school. More specifically, this study sets out to address the following study aims.

RESEARCH QUESTIONS AND ANALYSIS PLAN

The purpose of the study was to assess if measurements of socioeconomic status, competence, temperament, and social connectedness in middle adolescence influence student's susceptibility to suicidal thoughts and behaviors once in high school. The participants included in this study were asked to fill out a questionnaire annually while in high school which measured the prevalence of any suicidal ideations and behaviors. These were students who had been taking part in a broader project examining youth health risk behaviors which began during grade school. While the variables chosen as constructs for the proposed study have all been labeled individually as risk factors or protective resources for adolescents against health-risk behaviors such as suicide, little research has focused on these constructs as early as middle childhood (4th through 6th grades) to examine levels of risk predictive of later suicide-related ideations or behaviors. This research will advance the central focus of the Long Herby and DHBMA datasets by completing a secondary analysis that examines the relationships of specific variables to

suicide-related ideations and behaviors. Listed below are the proposed hypotheses that were addressed in the study.

Research Questions

Research Question 1: Will family socioeconomic status predict the likelihood of adolescents responding positive to suicide-related ideations and behaviors in high school?

Families that reported lower socioeconomic status measured when the participant are in 4th-6th grade, will have adolescents that are more likely to respond positively to suicide-related ideations and behaviors in high school.

Research Question 2: What is the predictive utility of childhood temperament on future adolescent suicide-related ideations and behaviors?

This study utilizes a parent-rated temperament measure. Specifically, child temperaments, which can be considered to be negative or difficult, are predicted to demonstrate a stronger association to positive suicide-related ideations and behaviors after controlling for socioeconomic status measured by income.

Research Question 3: What is the predictive utility of social connectedness on future adolescent suicide-related ideations and behaviors?

Social connectedness is considered a protective factor. Student participants who report a lower level of connection with others on a measure of social connectedness will be at a higher risk for future suicide-related ideations and behaviors in adolescent, whereas, those children reporting a higher level of connection among others will be protected against future suicide-related ideations and behaviors after controlling for socioeconomic status measured by income.

Research Question 4: What is the predictive utility of children's perceived competence on future adolescent suicide-related ideations and behaviors?

This study will utilize a measure examining the student's self-report of their perceived competence in various domains. The current study suggests that specific areas of competence will forecast a stronger relationship is predicted with future suicide-related ideations and behaviors after controlling for socioeconomic status measured by income.

Data Analysis Strategy

Data analysis will begin with basic exploratory analysis, including frequency distributions and graphical data exploration procedures for descriptive purposes. Following the descriptive statistics, the associations between the observed variables (indicators of SES, measures of temperament, social connectedness, and competence) and suicide-related ideation and behaviors will be examined with two different statistical methods; multiple linear regression and binomial logistic regression.

Multiple regression is used when the aim is to predict a continuous outcome using several predictor variables. In the current study, the outcome variable used for the multiple regression analysis is a summed total of the student's responses to the suicide questionnaire. The outcome variable for this study is continuous and includes only those students who answered positively to the suicide questions.

Binomial (or binary) logistic regression was utilized for this study because it predicts an outcome from a set of predictor variables and determines the percent of variance in the outcome variable which can be explained by the predictor variables. Moreover it is used when the dependent variable is dichotomous and the predictor variables are of any type (continuous or categorical). (The University of Nebraska Lincoln http://ssp.unl.edu/wwwfiles/Logistic_Regression_Analysis.pdf retrieved March 27, 2011). Two separate logistic regressions will be performed on question two and three

from the suicide measure where the outcome variable is either a self-reported ‘yes’ or ‘no.’

The current study utilized a hierarchical approach for the regression analysis where the measure of socioeconomic status is entered first as a covariate so as to anticipate that effects are merely due to family socioeconomic status; next the variables that are most relevant to the study’s hypothesis were entered.

CHAPTER THREE: RESEARCH METHODOLOGY

Chapter Three describes the methodology used in the study. This chapter begins with the background setting including a brief overview of the longitudinal studies from which the current study is derived. It continues with an explanation of the current sample and more specific details about the procedures including recruitment and retention of the participants. The chapter also describes the measures used for the current study. Finally, chapter three concludes with the hypotheses that were made and the data analysis strategy.

SETTING DESIGN

As detailed in Chapter Two, this dissertation study extended research from two larger longitudinal studies (Long Herby and DHBMA) in which the aim was to examine contextual/risk factors, protective resources, and health risk behaviors of school age children as predictors of health-promoting and health-risk behaviors in middle adolescents. This study was uniquely conducted in three rural school districts of central Texas to include Austin and neighboring cities. This central area of Texas is known for a rapidly growing population of Hispanics of who are mainly of Mexican descent (Rew et. al., 2010).

Brief Overview

For those students and parents who were enrolled in the Longitudinal Study of Health Risk Behaviors of Youth (Long Herby), the data collection process began in the schools. During the first several years of the Long Herby study, the research team traveled to each school in order to have the students complete their survey during class via the computer. For those students who were absent on the day of data collection, a

paper copy was mailed to the home. The Long Herby surveys asked about various health behaviors of the students. Additionally, paper copies for the parent surveys were mailed home separately. The parent surveys included questions related to family demographics as well as information about their children.

As the Long Herby study was concluding, the principal investigators received further funding to continue their research examining health behaviors of high school students. Therefore, as this cohort of student participants matriculated into high school they had the opportunity to continue their annual participation with this same research study but under a different name. The high school version of the study, known as Developing Health Behaviors in Middle Adolescence (DHBMA), not only asked about student health behaviors but also included questions specifically related to this age group such as sexual activity, illicit drug use, and possible suicidal ideations. For the high school version of the study, the schools no longer allowed the research team to administer the survey on school grounds because of the sensitive nature of the questions. There was the opportunity for the research team to conduct home visits that would allow the students and their parents to complete the questionnaires via a laptop computer. In addition, for those cases where a home visit was not possible, the participants and their parents were mailed out the questionnaires. The high school version of the questionnaire was approximately 25 pages in length.

As a result of the longitudinal nature of the current study, the data collection and analysis are ongoing. At the time of the secondary analysis, the data utilized for this research included several years of data collection from 2003 to 2010 and over 2000 participants. The data was recorded and coded in an Excel spreadsheet by this research team member. From there the data was further organized by participant's initial

recruitment date and included a mixture of participants that were in fourth, fifth, or sixth grade.

SAMPLE

Parents and children completed questionnaires annually from grade school through high school. Rew et.al. (2010) recently analyzed the Long Herby and DHBMA data set as part of a separate secondary analysis examining health risk behaviors of children. Their convenience sample was compromised of 1,934 school–aged students in three cohorts Grades 4 (n=781), 5 (n=621), and 6 (n=532). The data collection began the same year with recruitment occurring concurrently among 4th, 5th, and 6th graders. The sample included 900 (46.5%) boys and 1, 034 (53.5%) girls with an overrepresentation of Hispanic children (991=51.2%) when compared to that of non-Hispanic children. Of the 943 participants who did not identify as Hispanic, 597 racially identified themselves as White, 192 Black, 5 Asian, 2 Native Hawaiian/Pacific Islander, 6 American Indian, and the remaining indicated either as multiracial or unspecified.

The current study's total sample, including parents who completed surveys along with their children, was slightly more at approximately 2029 participants. The breakdown of grades, gender, and race were similar to the findings of Rew et.al. (2010).

PROCEDURE

Measures of socioeconomic status, childhood temperament, of competence, and of social connectedness were retrospectively examined for high school students who responded positively to suicide questions for at least one time point while they were in grades 9^{th} through 12^{th} grades as part of the two larger longitudinal studies.

Recruitment and Retention

The students were informed they would be taking part in a study that examined health behaviors from middle school to adolescence. The ethical standard of the University of Texas' "Policies and Procedures Governing Research with Human Subjects" were followed to inure ethical treatment of the participants. Parents provided written consent at the beginning of the Long Herby and DHBMA studies and the child gave assent every year prior to data collection. The current research study was conducted in accordance with the guidelines set forth by the Institutional Review Board (IRB) for the Protection of Human Subjects at the University of Texas at Austin. IRB approval 2010-01-0018 was granted prior to the secondary analysis of this data set.

Long Herby Recruitment

Following initial IRB approval, recruitment procedures for the Long Herby study comprised of packets being mailed to parents of all children in Grades 4 through 6 in three rural school districts. The informational packets included a cover letter from the school, a letter explaining the study from the researchers, and consent forms. All letters were written in English and Spanish. The procedures for translating the letters included forward and backward translations by independent speakers and review by bilingual members of the community for translation quality and clarity before mailing (Rew et.al.2010). In addition informational meetings were held at the school after parent-teacher meetings. This procedure was to further explain the study to children, answer questions, and obtain signed permission from the parents. The data was later collected during school hours using computer-assisted self-interviewing (A-CASI) technology on laptop computers or via audio (optional) for those students who agreed to participate by providing written assent (Rew et.al., 2010). Each session of data collection included 25-30 children. The participants were oriented to the A-CASI format and the surveys were

accessible to the student in either English or Spanish. Participants who had difficulty with reading were provided the option of audio support. As each child completed the questionnaire, research assistants saved the data to a secure Website. Those students who were absent on the day data was collected were mailed home paper-pencil versions of the scales. Additionally, parents were sent home a survey for the first year of the study which included demographic information as well as questions relating to acculturation, temperament, neighborhood quality

Finally, participants and their parents were also assured that their refusal to participate in the study would not impact any current or future relationships with The University of Texas at Austin or their school district. For their participation, families were informed that the student would receive a $10 Target card upon completion of the survey. The students' responses on the survey were kept confidential. A signed, informed-consent form, (Appendix A, B) approved by the Department Review Committee and the University Institutional Review Board, exists on file for each participant.

A research team comprised of graduate research assistants from the School of Nursing and Educational Psychology made school visits annually to administer the computer based Long Herby survey to the students who consented to participate. The Long Herby survey included measurements on perceived stress, coping, sense of humor, social connectedness, school engagement, competence, child health behaviors, and health risk behaviors.

DHBMA Recruitment

For those students and their parents, who had agreed to participate in the Long Herby study, received a phone call from the research team once that student began their

9th grade year. The phone call informed the student and their parents that the research in which they had consented to participate in previous years had been extended for four more years (now termed the DHBMA study) the families were asked if they would like to continue their participation. Further participation would require the student to take another survey annually through 12th grade. The families were reminded about the nature of the study and the type of activity involved. However, as part of the DHBMA study, the participants were to be asked about the incidence of suicide-related thoughts or behaviors. Parents were informed about these additional sensitive questions on the adolescent version of the survey which would not only include questions on the presence of suicidal behaviors but also on sexual activity. Parents were informed that if the adolescent answered questions about suicide positively, then the researcher would make a phone call to inform the parent and refer them to a community professional. Also as part of DHBMA, parents were again asked to fill out a survey for the first year of the study which included demographic questions as well as questions relating to family size, chronic illness history, parent's health risk behaviors, neighborhood quality, and religious affiliation.

There was a slight change in procedures in data collection from Long Herby to DHBMA. The change in procedures between the two studies revolved around the way in which data was to be collected. Parents were informed that students would no longer have the opportunity to take the surveys at school but rather the family would be given the option to have the survey administered either through an email link, sent home through mail, or the research team would make a home-visit to the family and the student could take it via a laptop computer. Over the course of the research study due to lack of consistent participation, as well as concern about the security of the web-based surveys,

families participating in the study were administered the survey by having it mailed to the home.

As a result of this method of data collection in which parents and students were given separate surveys, many times these surveys were administered at different times. Furthermore, even if they were administered at the same time, efforts were made to keep the surveys separate in order to maintain confidentiality. Consequently, it was not unusual for the research team to receive surveys from members within the same family spaced out over a period of time. It was also not unusual to receive completed surveys from the students but not the student's parents or vice versa. When this occurred every effort was made from the research team to contact the family and encourage their participation and the importance of timeliness when returning the surveys.

INSTRUMENTS

The following instruments were chosen to measure the constructs consistent with the suicide-related outcome variable and the predictive variables of interest as described in the current study's encompassing framework presented in Chapter One and detailed in Chapter Two.

This study will investigate whether socioeconomic status and middle childhood variables of competence, social connectedness, and childhood temperament could be predictive factors for later suicidal ideations and suicide-related behaviors in adolescence. The youth themselves were the respondents for the instruments in this study with the exception of the temperament questionnaire which was completed by the parents. Social Connectedness and Competence was collected from the students annually while they were participants of the Long Herby study between grades 4 through grade 6. Child temperament was collected from the parent survey at one time point -when their student

was initially recruited to participate in the Long Herby study in either 4th through 6th grades. Suicide- related items, the dependent variable, was self-reported and was assessed annually between grades 9 through grade 12 as participants in the DHBMA study.

Similar to the manner in which recruitment letters were translates, all of the research instruments have been translated into Spanish by a professional translator who is fluent in Mexican-Spanish and English. The instruments were then back-translated into English by a second individual fluent in Mexican-Spanish and English who did not see the original instruments. Both the first translation and the back-translation followed a symmetrical translation in that meaning and colloquialisms remain central to the translation rather than literal word to word translations (Jones & Kay, 1992). The translated instruments were reviewed by two parents of children from Del Valle Independent School District who deemed the wording appropriate for use with Mexican American children in this setting. The original and back-translated forms of the instruments were again reviewed for symmetry of meaning by the School-Community Advisory Council to ensure translated terms are understandable to the study population (IRB grant 2001).

TABLE 1:

Procedural Timeline of Measures

MEASUREMENT	VARIABLE	TIME COLLECTED
Family Income	Socioeconomic Status	Parent rated 4-6th grade
School-Age Temperament Inventory (SATI)	Temperament	Parent rated 4-6th grade
Social Connectedness Scale (SCS)	Social Connectedness	4-6th grade
Harter Self-Competence Scale (HSCS)	Self-Competence	4-6th grade
YRBS Suicide Questions	Suicide	9-12th grade

Outcome Variable-Measure collected in grades 9-12

Suicide-Related Ideations Behaviors

The dependent variable for the proposed study is a self-report of suicide-related ideations or behaviors (Appendix C). Youth suicide-related outcomes were drawn from five items within the Youth Risk Behavior Survey (YRBS), a national survey developed by the Centers for Disease Control (CDC) that was designed to monitor health risk behaviors that can contribute to death and injury in youth. The YRBS was completed annually as one part of the DHBMA survey for participants in 9th through 12th grades. Suicide-related questions are categorized in the YRBS as behaviors that contribute to violence.

The adolescents were considered to be positive for suicide-related ideations and/or behaviors in grades 9-12 if they reported positively to either question two through five for one or more measurement points in grades 9-12. Research conducted by Brener and colleagues (2002) examined the Kappa statistic for various questions of the 1999

YRBS survey A Kappa statistic is used as a measure of inter-rater agreement that corrects for change. The Kappa statistic for the suicide questions was rated as fair to good with Kappa's ranging from 52% to 74%. A Kappa of .75 is considered excellent (Fleiss 1981). The Kappa for feeling sad or hopeless in the past 12 months was 56.4%, for considering suicide in the past 12 months was 74.3%, 66.6% for planning suicide in the past 12 months, 72.7% for having one or more suicide attempts in the past 12 months, and 52.3% of having an injurious suicide attempt in the past 12 months (Brener, et.al., 2002).

The procedures stated that the adolescent participants were informed that positive responses to the questions (specifically questions 2-5) pertaining to suicide would be disclosed to parents. Parents were informed of the positive responses via a phone call within one week by either the principal investigator or this graduate research assistant. Families that indicated parents were Spanish-speaking received phone calls by this Spanish speaking graduate research assistant. In all cases, families were given referral materials for community professionals.

Items one through three were coded as categorical variables with "yes" or "no" as the option choices. Item one asks students about the presence of depression by inquiring if they had ever "felt sad or hopeless for more than two weeks in a row that you stopped doing some usual activity." Item two asks about the occurrence of suicidal thoughts and item three asks about the occurrence of certain suicidal behaviors such as making a plan. Originally, item four is a continuous variable containing five answer choices which quantify the number of times an adolescent made an attempt at suicide, up to "six or more times." Item five has three outcome choices asking the adolescent to indicate if an attempt at suicide resulted in injury that required hospitalization. The answer choices were "yes," "no," and "I did not attempt suicide in the past twelve months."

As discussed in detail from the review of the literature there does not exist ample standardized data on clear or concise definitions of suicide behavior in adolescence (Apter 2010). For the current study, the suicide questions were weighted and a summed into one linear variable ranging from 0 to 10 with 0 meaning that the student did not answer positively to any of the suicide questions and 10 meaning that they reported a high level of suicide-related ideations and behaviors. The suicide questions represent a way in which the analysis can capture the prevalence of general suicide ideations and behaviors within the sample. The questions from the original YRBS survey were designed to be read in order of severity and therefore they were weighted accordingly. For example those with multiple suicide attempts counted for more "weight" in level of severity.

Independent Variables-Measure collected in grades 4-6

Socioeconomic Status

A strength of using income as the measure of socioeconomic status suggests that it allows access to material goods and services that have influences over health behaviors. However some limitations to be aware of when using income as a measure of socioeconomic status suggest it is unstable over time compared to education or occupation, it is age dependent, it has a higher nonresponse rate, and also does not include all assets such as wealth, health insurance coverage, disability benefits, etc (Shaver 2007). Ensiminger and colleagues (2000) confirmed the existing research which states discrete measures of income are the preferred manner for determining family socioeconomic status however their research also pointed out that 17.5% of mothers do not report family income on surveys. However research asserts there is a linear

relationship between income and health behaviors because it affords the ability to have healthcare, better nutrition, housing, schools, and recreation (Shavers 2007).

In the current study, socioeconomic status assessed from the parent survey, was collected to measure sociocultural contextual risk data about the child participants. One question from the parent's survey was used as the variable of socioeconomic status (SES) (Appendix D). This question asks the participant's parents to fill in the annual household income. This data will be entered as a continuous variable.

Temperament

Temperament is conceptualized as a group of intrinsic trait that shapes a individual's responses to events. Temperament reflects parents' perceptions of the ease or difficulty they have in parenting a particular child (Tomlinson, Harbaugh, & Anderson 1996). Temperament is operationally defined as the parent's rating of the child on the School- Age Temperament Inventory (SATI) (Appendix G). The SATI is compromised of four dimensions that were determined by factor analysis. Negative Reactivity can be conceptualized as the frequency with which a child expresses negative emotion. Twelve items of negative reactivity are related to frustration tolerance. Task Persistence is the degree of self-direction that a child exhibits in fulfilling tasks and includes eleven items related to distractibility and attention. Approach/Withdrawal temperament is the child's initial reaction and response to new people. Nine items measuring approach/withdrawal include such questions related to whether the child approaches children he or she does not know. Finally, activity temperament is conceptualized as large motor activity (McClowry 2002). Six items measuring activity include items related to whether the child makes excessive noise when moving from room to room. The SATI was originally developed to measure parent's perceptions of 8-12 year old children's temperaments and has been used

in clinical practice (McClowry, 1995). The psychometric properties of the SATI were tested in a study of 506 middle class, Caucasian children ages 8-12. Factor analysis generated four factors of task persistence, negative reactivity, activity, and approach/withdrawal with item loading of >.40, providing evidence of construct validity. In a second sample of 362 working class and middle-class children (McClowry, et al., 1993), the Cronbach's alpha ranged, for the four subscales, from .83 to .87. In a third study examining, child maladjustment, negative reactivity, low child persistence, and maternal hassles had a direct effect on children's problem behaviors (R2=.56) (McClowry, Giangrande, Tommasini, Clinton, Foreman, Lynch, et al., 1994). The shorter 40-item instrument, which was utilized in McClowry and colleagues' study on child maladjustment (1994) was used in the Long Herby study. The reliability coefficients for the subscales in this sample were task persistence (α =.88), negative reactivity (α =.90), approach/withdrawal (α =.78), and activity (α =.78) (Rew et.al., 2010).

Social Connectedness

Social connectedness is a protective resource that refers to relationships the child has with others that significantly support the child's ability to cope with negative situations (Frydenberg & Lewis, 1993). Social connectedness is a global construct that refers to an individual's subjective sense of closeness and togetherness within their social environment (Lee & Robbins, 1995). Their research suggests that social connectedness is related to subjective well being. Social connectedness will be operationally defined as the child's score on the Social Connectedness Scale, which contains 10 items with a 4-option Likert response format (Appendix E). High scores indicate that the child believes that their parents, friends, family members and other adults care for him or her. The original Social Connectedness Scale was originally sampled on ethnically diverse 7th graders.

SCS was written for the Adolescent Health Survey and was labeled the Family Integration Scale (Blum, Harris, Resnick, & Rosenwinkel, 1989).This scale has been adapted by the principal investigators of Long Herby for use with younger children. The original scale had a Cronbach's alpha of.92 for females and .96 for males in 7th grade. The Cronbach's alpha for this sample was .76 (Rew et.al., 2010).

Competence

Children's sense of competence is a reflection of their self-evaluation in various domains of functioning (Harter, 1982; Harter, 1985). Children make judgment of their skills through their perceptions of how well peers function in the same domains. Competence domains include scholastic competence, social acceptance, athletic competence, physical appearance, behavioral conduct, and global self-worth. Scholastic competence taps into the child's perceptions of school ability. Six items related to scholastic competence include items related to how children perceive the ability to do school work. Social acceptance taps into the degree to which one has friends, feels popular, and feels liked by most kids and includes six items related to their ability to make friends compared to other children. Athletic competence taps into the child's perception of ability in sports or outdoor games. There are six items of athletic competence include how well children perform in sports. Physical appearance taps into the extent to which a child feels he or she is good-looking and is content with their body and the way they look compared to other children. Items related to physical appearance include six items about how they look. Behavioral conduct measures how much the child likes the way he or she behaves, does the right thing, avoids getting in trouble, and does things the way they are supposed to do. Items of behavioral competence include six items related to how children view their behavior compared to other children. Global self-worth

taps into the extent to which the child likes him or herself as a person and is generally happy with the way he or she is generally. Six items related to global self-worth include items related to the child's perceived self-esteem.

Self-competence will be operationally defined as the child's score on the Harter Self-Competence Scale (HSCS) (Appendix F). The scale includes six domains with six items each for a total of 36 items. The last dimension is a global judgment of self-worth and is not assumed from the sum or average of responses. Six scored are obtained one score for each of the six subscales. Harter (1982, 1985) devised a structured alternative format with two alternatives for each item to reduce the tendency of children to give a socially desirable response. Half the items begin with a positive sentence, reflecting high competence, the other half with a negative sentence reflecting low competence (Faria, 2001). Each item is scored on a scale ranging 1 to 4 with 1 reflecting low perceived competence and 4 representing high perceived competence. In regards to psychometric properties, adequate internal consistency of each of the subscales was determined through 4 psychometric studies with children ranging in 3rd through 8th grade and sample sizes ranging from 178-748 children (Harter, 1985). Reliabilities ranges for each of the four samples are as follows; scholastic competence (.80-.85), social acceptance (.75-.80), athletic competence (.80-.86), physical appearance (.76-.82), behavioral conduct (.71-.77), and global self-worth (.78-.84). The reliability coefficients for the subscales of this sample were scholastic competence (α =.72), social acceptance (α =.67), athletic competence (α =.69), physical appearance (α = .76), behavioral conduct competence (α =.73), and global self-worth (α =.73) (Rew et.al., 2010).

RESEARCH QUESTIONS AND ANALYSIS PLAN

The purpose of the study was to asses if measurements of socioeconomic status, competence, temperament, and social connectedness in middle adolescence influence student's susceptibility to suicidal thoughts and behaviors once in high school. The participants included in this study were asked to fill out a questionnaire and while in high school which measured the prevalence of suicidal thoughts and behaviors. These students have been taking part in a broader project examining youth health risk behaviors beginning in the fourth grade. While the variables chosen as constructs for the proposed study have all been labeled individually as risk factors or protective resources for adolescents against health-risk behaviors such as suicide, little research has focused on these constructs as early as middle childhood (4th through 6th grades) to examine levels of risk predictive of later suicide-related ideations or behaviors. This research will advance the central focus of the Long Herby and DHBMA datasets by completing a secondary analysis that examines the relationships of specific variables to suicide-related ideations and behaviors. Listed below are the proposed hypotheses that were addressed in the study.

Research Questions

Research Question 1: Will family socioeconomic status predict the likelihood of adolescents responding positive to suicide-related ideations and behaviors in high school?

Hypothesis 1

Families that reported lower socioeconomic status measured when the participant are in 4th -6th grade, will have adolescents that are more likely to respond positively to suicide-related ideations and behaviors in high school.

Research Question 2: What is the predictive utility of childhood temperament on future adolescent suicide-related ideations and behaviors?

Hypothesis 2

Of the four subscales on the School-Age Temperament Inventory (SATI), the subscales of negative-reactivity and approach/withdrawal will demonstrate a stronger association to positive suicide-related ideations and behaviors after controlling for income.

Research Question 3: What is the predictive utility of social connectedness on future adolescent suicide-related ideations and behaviors?

Hypothesis 3

Social connectedness will act as a protective factor. Those 4th through 6th graders that report a lower level of connection with others on the Social Connectedness Scale (SCS) will be at a higher risk for future suicide-related ideations and behaviors in adolescent, whereas, those children reporting a higher level of connection among others will be protected against future suicide-related ideations and behaviors after controlling for income.

Research Question 4: What is the predictive utility of children's perceived competence on future adolescent suicide-related ideations and behaviors?

Hypothesis 4

On the Harter Self-Competence Scale (HSCS) three subscales will demonstrate a stronger relationship with future suicide-related ideations and behaviors after controlling for income.

A self-reported higher global self-worth will act as a protective factor against future suicide-related ideations and behaviors and therefore those children reporting lower global self-worth will demonstrate exhibit a stronger relationship to future suicide-related ideations and behaviors.

Self-reported lower social acceptance in 4th-6th grade will demonstrate a stronger association for future suicide-related ideations and behaviors.

A self-report of poorer behavioral conduct competence will reveal a stronger relationship to future suicide-related ideations and behaviors.

Analytic Strategy

Data analysis will begin with basic exploratory analysis, including frequency distributions and graphical data exploration procedures for descriptive purposes. Following the descriptive statistics, the associations between the observed variables (indicators of SES, measures of temperament, social connectedness, and competence) and suicide-related ideation and behaviors will be examined with two different statistical methods; multiple linear regression and binomial logistic regression.

Multiple regression is used when the aim is to predict a continuous outcome using several predictor variables. In the current study, the outcome variable used for the multiple regression analysis is a summed total of the student's responses to the suicide questionnaire. The outcome variable for this study is continuous and includes only those students who answered yes to the suicide questions.

Additionally, binomial (or binary) logistic regression was utilized for this study because it predicts an outcome from a set of predictor variables and determines the percent of variance in the outcome variable which can be explained by the predictor variables. Moreover it is used when the dependent variable is dichotomous and the predictor variables are of any type (continuous or categorical). (The University of Nebraska Lincoln http://ssp.unl.edu/wwwfiles/Logistic_Regression_Analysis.pdf Retrieved March 27, 2011). Two separate logistic regressions will be performed on

question two and three from the suicide measure where the outcome variable is either a self-reported 'yes' or 'no.'

The current study utilized a hierarchical approach for the regression analysis where the measure of socioeconomic status is entered first as a covariate so as to anticipate that effects are merely due to family socioeconomic status; next the variables that are most relevant to the study's hypothesis were entered. The outcome variable for multiple regression analysis is a summed total of the student's responses to the suicide questionnaire examining only those students who answered positively. In addition, two separate logistic regressions will be performed on question two and three of the suicide questionnaire where the outcome variable is either a self-reported yes or no. The goodness of fit will be examined to test the overall significance of the model. An alpha level of .05 was used for statistical results.

TREATMENT OF MISSING DATA

When it comes to research on longitudinal data, studies have shown that there are important differences among respondents who participate in all phases of longitudinal studies as opposed to those who are lost to attrition (Odierna & Schmidt 2009). Attrition bias can change the composition of the sample which can potentially lead to bias in the results. Attrition can also reduce the sample size and increase the likelihood of Type II errors in the analysis. According to the research by Odierna and Schmidt (2009), hard to reach respondents are defined by the extended effort required to contact them in any way including phone calls, residential visits, or letters. Their investigation examined violent victimization of low-income women. Their results found that retaining hard to reach respondents after 12 months increased the response rates in the overall sample from 71% to 89% and that furthermore, excluding those hard to reach respondents who have

contributed to erroneous conclusions. Interestingly, their research did not find any significant differences in demographic data that may have contributed to the attrition rates of respondents including their race/ethnicity, age, income, education, or marital status.

There are several approaches to handle missing data, irrespective of whether the missing values are random or non-random (retrieved December 15, 2010 from North Carolina State University (http://faculty.chass.ncsu.edu/garson/PA765/missing.htm). The two most modern and acceptable approaches to replace missing values include Maximum Likelihood Estimation and Multiple Imputation. These solutions to missing data are highly technical and require the use of the statistical package SAS. One of the other options includes leaving the data as is with missing values in place, known as listwise deletion. This option is beneficial under the assumption that the missing data are completely at random because it creates unbiased parameters, however in the event the missing data are not completely at random the consequences could be biased results and may not accurately reflect the current sample. However one of the problems that could have occurred with this particular study, which occurs when there is a significant amount of missing data, is the substantial loss in the samples size and resulting loss of power.

In an effort not to distort the analysis or reduce the sample size, the other option to handle missing data was to replace the missing values through a technique known as linear interpolation. This was the chosen option for the current study. Although imprecise, linear interpolation is used to approximate a value based on other known data points and allows for the holes to be filled in, only the predictor variables were altered using linear interpolation. The dependent outcome variables related to suicidal behaviors were not altered using the linear interpolation method.

CHAPTER FOUR: RESULTS

The purpose of the study was to asses if measurements of socioeconomic status, competence, temperament, and social connectedness in middle adolescence influence student's susceptibility to suicidal thoughts and behaviors once in high school. The study involved charting students and parents self-report on the selected variables each year through middle adolescence. The study then followed and recorded these student's responses in high school regarding the presence of suicidal behaviors. The preceding chapter provided a detailed description of how the research for this study was conducted, and this chapter begins with presenting how the study handled missing data. Next, descriptive information regarding the data set. Finally, the chapter closes on the results from the analysis regarding the research questions and whether the measurements could ultimately predict suicide related-behaviors in high school.

DATA PREPARATION AND PRELIMIARY ANALYSIS

As stated in Chapter Three, the non-probability sample from Rew and colleagues' (2010) initial analysis of the longitudinal studies totaled 1934 student and parent participants. For the current study, two cohorts of data were available for secondary analysis. The current study's sample was slightly larger at 2029 participants.

The first stage of the analysis examines the hypotheses using multiple linear regression to assess the efficacy of the current study's predictor variables in forecasting adolescent suicidal ideations and behaviors in high school. The multiple regression analysis examined only those students who responded yes to the suicide questions. Multiple linear regression is used when one wants to predict a continuous outcome measure (suicide scores) using several independent variables. In the second stage of the

analysis binary logistic regressions illustrate the contribution of the predictor variables in specifically examining whether students answered yes or no to suicide-related ideations and behaviors. Binary logistic regression is used when one wants to predict one outcome from another from a set of predictor variables.

The data was recorded and coded into an Excel (2003) spreadsheet by the principal investigator. Then it was imported into SPSS 19 for analysis. Before conducting the primary analysis using multiple regression and logistic regression, the principal investigator assessed for assumptions as outlined by Field (2005). Linearity was assessed by inspecting scatterplots, normality assumption for distributions of residuals was analyzed using a plot of residuals against predicted values, outliers were examined and finally, multicollinearity was assessed by evaluating the tolerance and variance factor (VIF) statistic.

MISSING DATA

To review the previous chapter on the method of data collection; parents and students were given separate surveys; in many cases these surveys were administered at different times. In fact, it was not unusual for the research team to receive surveys from members within the same family spaced out over a period of time. Additionally, it was not unusual to receive completed surveys from the students but not the student's parents or vice versa. When this occurred every effort was made from the research team to contact the family and encourage their participation and emphasize the importance of timeliness when returning the surveys. As prior research has indicated, it is important to retain hard to reach respondents because ultimately they can affect the study's findings. In the current study's case, the lag time and inability to control which family member was

returning their survey contributed to a "messy" data set with varying sample size based on each variable measured.

After the data set was compiled, initial data screening, completed through SPSS, determined 88% of the original numeric data was considered missing data. The composition of the missing data can not be considered completely at random. Importantly, the missing data also included data from the dependent variable. One likely reason points to the idea that many students may not have answered the questions about suicide behaviors intentionally.

Another likely reason relates to the organizational process of data collection. The research team was attempting to collect data from multiple parties within the same family (one parent and sometimes multiple children) annually while maintaining each participant's confidentiality. As a result, families were asked to send back each and every survey in a separate sealed envelope as opposed to all at once in one family packet. The extra effort required of mailing out an additional surveys likely contributed to the incidence of missing cases. In some instances, the method of the data collection process could have contributed to biased results. For example, the study participants and their parents may have inadvertently skipped questions on the questionnaire. Also, in some instances, study participants may have refused to answer certain questions, in particular the ones regarding household income.

INTERNAL CONSISTENCY RELIABILITY

Outcome Variable

Previous research indicates that definitions of suicidal behavior in adolescents lack any clear and concise definitions regarding severity behaviors (Apter 2010). Therefore in considering the current body of research, detailed in Chapter Three, the

current study scaled the YRBS suicide questionnaire. The outcome variable consists of a suicide "score" based on the student's range of responses. The current study performed preliminary analysis on the internal consistency reliability of the summed suicide-related ideations and behaviors variable "score" by utilizing the Cronbach's alpha statistic. A Cronbach's alpha reliability coefficient at or above .70 indicates consistent items in a measure (Simon, 2006). The resulting Cronbach's alpha revealed the new summed suicide- related ideations and behaviors to be .78, suggesting adequate reliability. To reiterate the purpose of scaling the questions was to provide additional information specifically for the students who reported that they had engaged in suicidal behaviors. The new variable is representative of the total level of severity ranging from merely thinking about suicide to having thought about, planned it, and even attempted suicide multiple times resulting in injury.

DESCRIPTIVE STATISTICS

Preliminary analysis for the current study included the frequencies for participants' demographic data. Table 2 displays the frequency (n) counts and percentages for general demographics of participants. The mean income reported by parents was $43, 517 (SD = 31625). Approximately, 36% of the sample was reported as male and 40% was female and the remaining 23% did not respond. Approximately 32% of the sample was recruited in 4th grade, 25% recruited in 5th grade, and 20% recruited in the 6th grade. Approximately 34% of families were eligible to receive a free lunch at school. Additionally, approximately 7% of the families reported using government assistance.

TABLE 2:

General Demographics of Participants

	(n)	%
Gender (N=1554)		
Male	732	36.1
Female	822	40.5
Missing	475	23.4
Free Lunch (N=1563)		
Yes	882	43.5
No	681	33.6
Missing	466	23.0
Welfare (N=1555)		
Yes	144	7.1
No	1411	69.5
Missing	474	23.4
Year in School (N=1554)		
4^{th}	639	31.5
5^{th}	504	24.8
6^{th}	411	20.3
Missing	475	23.4

Frequencies of participant responses to the YRBS survey are presented in Table 3. The prevalence of high school students from this sample in central Texas reported feeling sad or hopeless everyday for two weeks or more was 24.4% which is slightly lower than the prevalence rates nationwide at 26.1%. Approximately 7.3% of the sample in central Texas reported seriously considering suicide compared to 13.1% of students nationwide. In the current sample, 5.8% of students reported making a plan about how they would commit suicide compared to 10.9% of students nationwide. The results of the current study indicate that 2.7% had attempted suicide one or more times in the past twelve months which is a third less than the national base rate. Less than 1% of students had a

suicide attempt that resulted in an injury, poisoning, or an overdose that had to be treated by a doctor or nurse.

TABLE 3:

Frequency of Suicide-Related Ideations and Behaviors

	(n)	**%**
Feeling Sad or Hopeless for 2 weeks or more (N=907)		
No	686	75.6
Yes	221	24.4
Thought about Suicide (N=918)		
No	851	92.7
Yes	67	7.3
Made a Plan about Attempting Suicide (N=918)		
No	865	94.2
Yes	53	5.8
Number of Attempts (N=917)		
0 times	892	97.3
1 times	13	1.4
2 or 3 times	10	1.1
4 or 5 times	1	.1
6 or more times	1	.1
Did an attempt result in injury requiring medical attention (N=904)		
Did not attempt	813	89.9
Yes	7	.8
No	84	9.3

The outcome variable (summed suicide scores from the YRBS survey) is presented in Table 4. This table displays the frequency (n) counts and percentages for suicide-related ideations and behaviors. The overwhelming majority of the total sample (88%) appeared to deny any suicide-related ideations or behaviors and therefore was not considered as part of the final analysis. Almost 250 students from the total sample (12%) reported engaging in one or more suicide-related ideations or behaviors or some combination. Only one student received a score of 10 on the suicide-related outcome

scale, meaning that they reported multiple suicide-related ideations and behaviors including feeling sad or hopeless for two weeks or more, thought about suicide, made a plan about suicide, and reported attempting suicide 4 or 5 times which resulted in injury requiring medical treatment.

TABLE 4:

Frequency of Summed Suicide Score from YRBS Survey (N=2029)

	(n)	%
Level 1	164	8.1
Level 2	8	0.4
Level 3	20	1.0
Level 4	11	0.5
Level 5	11	0.5
Level 6	18	0.9
Level 7	8	0.4
Level 8	4	0.2
Level 9	1	0.0
Level10	1	0.0
Missing	1783	87.9
Total	2029	100

ANALYSIS OF PRIMARY RESEARCH QUESTIONS

To review, the primary research analysis attempted to answer questions of whether measurements of socioeconomic status, competence, temperament, and social connectedness in middle adolescence could influence student's susceptibility to suicidal thoughts and behaviors once in high school. Multiple regression is a suitable analysis when an outcome variable is predicted from several predictor variables (Field, 2005). A p value less than .05 was established to support rejecting the null hypothesis with a 95 % confidence interval level.

Relationship between Socioeconomic status and Adolescent Suicide-Related Ideations and Behaviors in high school

Hypothesis 1

Hypothesis 1 proposed families that reported lower socioeconomic means would have adolescents in the home who were more likely to respond positively to suicide-related ideations and behaviors in high school. This hypothesis was not supported. Socioeconomic means did not predict any variance in suicide-related ideations and behaviors in high school $F(1,244) = 2.03$, $p>.05$, ns., indicating family income is not a predictor of high school suicidal ideation and behaviors

Relationship between Temperament and Adolescent Suicide-Related Ideations and Behaviors in high school

Hypothesis 2

Hypothesis 2 proposed that the subscales on the School-Age Temperament Inventory (SATI), measuring negative-reactivity and approach/withdrawal type of temperaments, would demonstrate a stronger association to positive suicide-related ideations and behaviors while controlling for income. Parents rated their children when the student's were in grade school.

Hierarchical multiple regression analysis was used to examine how well negative-reactivity temperament and approach/withdrawal temperament would predict suicide-related ideations and behaviors in high school after controlling for income. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variable of income was associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and suicide-related ideations and behaviors was not significant $F(1,122)=.10$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with negative-

reactivity and approach/withdrawal as the independent variables and suicide-related ideations and behaviors as the dependent variable with income as a covariate. Together, these predictor variables did not yield statistically significant results, predicting less than 0% of the variance in suicide-related ideations and behaviors, $F(3,120)=1.21$, $p>.05$, ns. Thus, independent variables of negative-reactivity and approach/withdrawal temperament did not predict suicide related ideations and behaviors when controlling for income.

Relationship between Social Connectedness and Adolescent Suicide-Related Ideations and Behaviors in high school

Hypothesis 3

It was hypothesized that students who rated themselves as feeling more socially connected in grade school will be less likely to engage in suicide-related ideations and behaviors in high school. Hierarchical multiple regression analysis was used to examine how well social connectedness would predict suicide-related ideations and behaviors in high school after controlling for income. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variable of income was associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and suicide-related ideations and behaviors was not significant $F(1, 244)=2.03$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with social connectedness as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable. A summary of the regression coefficients are presented in Table 5. A statistically significant relationship in the hypothesized direction was detected between social connectedness and suicide-related ideations and behaviors in high school while holding income constant $F(2,243)= 3.87$, $p<.05$. Social connectedness accounted for approximately 2.3% of the variance in

suicide-related ideations and behaviors. Results suggest more social connectedness, β=-.15, t(243) = -2.38, p<.05, in middle childhood is negatively related to suicide ideations and behaviors in high school while controlling for income.

TABLE 5**:**

Regression Coefficient for Social Connectedness and Suicide-Related Ideations and Behaviors with Income as a Confound

	Unstandardized Coefficients		Standardized Coefficients		
Model	***B***	***SE***	***β***	***t***	***P***
Step 1					
Constant	1.98	.24		8.42	<.001
Income	6.78	.00	.09	1.42	.16
Step 2					
Constant	4.66	1.15		4.05	<.001
Income	6.31	.00	.08	1.34	.18
SCS	-.79	.33	-.15	-2.38	.02*

Note. R^2= .01 for Step 1: Change in R^2=.02 for Step 2 (p<.05).

Relationship between Childhood Competence and Adolescent Suicide-Related Ideations and Behaviors in high school

Hypothesis 4A

It was hypothesized that students who rated themselves as having more global self-worth in grade school would be less likely to engage in suicide-related ideations and behaviors in high school.

Once again, hierarchical multiple regression analysis was used to examine how well global self-worth would explain and predict suicide-related ideations and behaviors in high school while holding income constant. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor

variable of income was associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and suicide-related ideations and behaviors was not significant $F(1, 244)=2.03$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with global self-worth as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable. The regression coefficients are presented in Table 6. A second statistically significant relationship in the hypothesized direction was detected, $F(2, 243)= 3.29$, $p<.05$. Global self-worth accounted for 1.8% of the variance in suicide-related ideations and behaviors. The more global self-worth reported in grade school, $\beta= -.40$, $t(243)= -2.13$, $p<.05$ predicted lower suicide-related ideations and behaviors in high school while controlling for income.

TABLE 6**:**

Regression Coefficients for Global Self worth and Suicide-Related Ideations and Behaviors with Income as a Confound

	Unstandardized Coefficients		Standardized Coefficients		
Model	***B***	***SE***	***β***	***t***	***P***
Step 1					
Constant	1.98	.24		8.42	<.001
Income	6.78	.00	.09	1.42	.16
Step 2					
Constant	3.18	.61		5.20	<.001
Income	6.68	.00	.09	1.41	.16
HSCS-Global	-.40	.19	-.14	-2.13	.03*

Note. $R^2= .01$ for Step 1: Change in $R^2=.02$ for Step 2 ($p<.05$).

Hypothesis 4B

It was hypothesized that students who self-reported lower social acceptance in grade school would be more likely to engage in suicide-related ideations and behaviors in

high school. Hierarchical multiple regression analysis results did not support this hypothesis.

Hierarchical multiple regression analysis was used to examine how well social acceptance competence would predict suicide-related ideations and behaviors in high school. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variable of income was associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and suicide-related ideations and behaviors was not significant $F(1,244)=2.03$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with social acceptance competence as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable. The results indicate that after controlling for income, social acceptance competence did not predict future suicide-related ideations and behaviors. Although these results approached significance, accounting for 1.5% of the variance, the hypothesis was not supported, $F(2, 243) = 2.81$, $p>.05$, ns.

Hypothesis 4C

It was hypothesized that students who self-reported poor behavioral conduct competence in grade school would be more likely to engage in future suicide-related ideations and behaviors in high school.

Again for this hypothesis, hierarchical multiple regression analysis was used to examine how well self-ratings of behavioral conduct competence would explain suicide-related ideations and behaviors in high school. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variable of income was associated with suicide-related ideations and behaviors. For step

one of the analysis, the relationship between income and suicide-related ideations and behaviors was not significant $F(1,244)=2.03$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with behavioral conduct competence as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable. The regression coefficient results are presented in Table 7. A third significant relationship in the hypothesized directions was detected after controlling for income, $F(2, 243) =4.36$, $p<.05$. Behavioral conduct competence was a significant predictor of future suicide-related ideations and behaviors and accounted for 2.7% of the variance. Therefore, after controlling for income, more behavioral conduct competence in middle childhood, $\beta=-.51$, $t(243)= -2.58$, $p<.05$ demonstrated a negative relationship with suicide-related ideations and behaviors in high school such that, as behavioral conduct competence increases the rate for suicide-related ideations and behaviors decreases in high school.

Table 7:

Regression Coefficients for Behavioral Conduct Self -Competence and Suicide-Related Ideations and Behaviors with Income as a Confound

	Unstandardized Coefficients		Standardized Coefficients		
Model	***B***	***SE***	***β***	***t***	***p***
Step 1					
Constant	1.98	.24		8.42	<.001
Income	6.78	.00	.09	1.42	.16
Step 2					
Constant	3.49	.63		5.53	<.001
Income	7.78	.00	.10	1.64	.10
HSCS-Behavioral Conduct	-.51	.20	-.16	-2.58	.01*

Note. $R^2= .01$ for Step 1: Change in $R^2=.03$ for Step 2 ($p<.05$).

ADDITIONAL ANALYSIS

Additional analyses of binary logistic regressions were conducted on two specific questions from the YRBS survey. This analysis further examined the predictive utility of the independent variables on specific adolescent suicide behaviors. Separate regressions were conducted for question two which asked adolescents whether they had seriously considered suicide and question three which asked adolescents whether they had created a plan about how they would commit suicide.

Question 2

For question two, the logistic regression analyses proceeded in two steps. The first model estimated the association between income and the dependent variable (seriously considering suicide) without other variables in the equation. The second model included predictor variables of temperament, social connectedness, and self-competence. Thus, the binary logistic regression was conducted to predict yes or no for 459 adolescents on suicide related ideations (considering suicide) from the YRBS questionnaire using family income, temperament, social connectedness, and self-competence as predictors. A test of the full model against the constant did not yield statistically significant results for question two indicating that the predictors as a set could not reliably distinguish between those students who report and those students who do not report seriously considering suicide (chi square =6.84, $p > .05$ with a df of 8).

Question 3

Again for question three, the logistic regression analyses proceeded in two steps. The first model estimated the association between income and the dependent variable (planning suicide) without other variables in the equation. The second model included predictor variables of temperament, social connectedness, and self-competence. Thus, the

binary logistic regression was conducted to predict yes or no for 459 adolescents on suicide related behaviors (planning) from the YRBS questionnaire using family income, temperament, social connectedness, and self-competence as predictors. Again, a test of the full model against the constant did not yield statistically significant results for question three indicating that the predictors as a set could not reliably distinguish between those students who report and those students who do not report planning how they would attempt suicide (chi square =5.861, p> .05 with a df of 8).

Relationship between Gender and Suicide-Related Ideations and Behaviors

As noted in the literature review, previous reports have found differences between gender and suicide. Specifically, it has been found that males have high rates of suicide deaths and that females have much higher rates of ideations and attempts compared to males (Greenberg, et al., 2003). Based on the 2009 YRBS survey, the prevalence of seriously considering suicide was higher for girls (17.4%) than boys (10.5%) (CDC, MMWR, 2010). On the other hand, the research indicates that males are more likely to complete suicide (Gould et al., 2003). Given these findings, an exploratory post-hoc analysis was conducted to better delineate the impact of gender on suicide based on the self-report YRBS survey.

Hierarchical multiple regression analysis was used to re-examine hypothesis two which looked at how well negative-reactivity temperament and approach/withdrawal temperament would predict suicide-related ideations and behaviors in high school after controlling for income and now gender. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variables of income and gender would be associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and gender and the

dependent variable of suicide-related ideations and behaviors was not significant $F(2,98)=.27$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with negative-reactivity and approach/withdrawal as the independent variables and suicide-related ideations and behaviors as the dependent variable with income and gender as the covariates. Together, these predictor variables did not yield statistically significant results, predicting less than 0% of the variance in suicide-related ideations and behaviors, $F(4,96)=.65$, $p>.05$, ns. Thus, independent variables of negative-reactivity and approach/withdrawal temperament did not predict suicide related ideations and behaviors when controlling for income and gender.

Hierarchical multiple regression analysis was used to re-examine hypothesis three which looked at how well social connectedness would predict suicide-related ideations and behaviors in high school after controlling for income and gender. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variables of income and gender would be associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and gender and the dependent variable of suicide-related ideations and behaviors was not significant $F(2,188)=.09$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with social connectedness as the independent variables and suicide-related ideations and behaviors as the dependent variable with income and gender as the covariates. The summary of the regression coefficients are presented in Table 8. A statistically significant relationship in the hypothesized direction was detected between social connectedness and suicide-related ideations and behaviors in high school while holding income and gender constant $F(3,187)= 1.82$, $p>.05$, ns. Social connectedness accounted for approximately 2.7% of the variance in suicide-related ideations and behaviors. Results suggest more social connectedness, $\beta=-.79$, $t(187) = -2.30$, $p<.05$, in

middle childhood is negatively related to suicide ideations and behaviors in high school while controlling for income and gender.

Table 8:

Regression Coefficients for Social Connectedness and Suicide-Related Ideations and Behaviors with Income and Gender as Confounds

	Unstandardized Coefficients		Standardized Coefficients		
Model	***B***	***SE***	***β***	***t***	***p***
Step 1					
Constant	2.09	.27		7.83	<.001
Sex	-.80	.35	-.02	-.23	.82
Income	1.97	.00	.03	.37	.71
Step 2					
Constant	4.81	1.21		3.97	<.001
Sex	-.10	.34	-.02	-.28	.78
Income	1.54	.00	.02	.29	.77
SCS	-.81	.35	-.17	-2.30	.02*

Note. R^2= .00 for Step 1: Change in R^2=.03 for Step 2 ($p<.05$).

Hierarchical multiple regression analysis was used to re-examine the first part of hypothesis four which looked at how well global self-worth would predict suicide-related ideations and behaviors in high school after controlling for income and gender. Once again, the hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variables of income and gender would be associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and gender and the dependent variable of suicide-related ideations and behaviors was not significant $F(2,188)=.09$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with global self-worth as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable with income and gender as the covariates. The summary of the regression coefficients are

presented in Table 9. A statistically significant relationship in the hypothesized direction was detected between global self-worth and suicide-related ideations and behaviors in high school while holding income and gender constant $F(3,187)= 1.96$, $p>.05$, ns. Global self-worth accounted for approximately 3% of the variance in suicide-related ideations and behaviors. Results suggest more global self-worth, $\beta=-.47$, $t(187) = -2.39$, $p<.05$, in middle childhood is negatively related to suicide ideations and behaviors in high school while controlling for income and gender.

Table 9:

Regression Coefficients for Global Self-Worth and Suicide-Related Ideations and Behaviors with Income and Gender as Confounds

	Unstandardized Coefficients		Standardized Coefficients		
Model	***B***	***SE***	***β***	***t***	***p***
Step 1					
Constant	2.09	.27		7.83	<.001
Sex	-.80	.35	-.02	-.23	.82
Income	1.97	.00	.03	.37	.71
Step 2					
Constant	3.53	.66		5.37	<.001
Sex	-.16	.34	-.03	-.45	.65
Income	1.14	.00	.02	.21	.83
HSCS-Global	-.47	.20	-.17	-2.39	.02*

Note. $R^2= .00$ for Step 1: Change in $R^2=.03$ for Step 2 ($p<.05$).

Hierarchical multiple regression analysis was used to re-examine the second part of hypothesis four which looked at how well social acceptance competence would predict suicide-related ideations and behaviors in high school after controlling for income and gender. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variable of income and gender was associated

with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income and gender and suicide-related ideations and behaviors was not significant $F(2,188)=.09$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with social acceptance competence as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable. The results indicate that after controlling for income and gender, social acceptance competence did not predict future suicide-related ideations and behaviors. These results approached significance, accounting for 0% of the variance, the hypothesis was not supported, $F(3, 187) = 2.32$, $p>.05$, ns.

Finally, hierarchical multiple regression analysis was used re-examine the last part of hypothesis four which proposed well self-ratings of behavioral conduct competence would explain suicide-related ideations and behaviors in high school. The hierarchical multiple regression analysis preceded in two steps. The first step of the analysis tested whether the predictor variables of income and gender were associated with suicide-related ideations and behaviors. For step one of the analysis, the relationship between income, gender, and suicide-related ideations and behaviors was not significant $F(2,188)=.02$, $p>.05$, ns. For the second step of the analysis, a regression was conducted with behavioral conduct competence as the predictor variable of interest and suicide-related ideations and behaviors as the dependent variable. A significant relationship in the hypothesized directions was detected after controlling for income and gender, $F(3,187)=2.1$, $p>.05$,n.s. The regression coefficient results are presented in Table 10. Behavioral conduct competence was a significant predictor of future suicide-related ideations and behaviors and accounted for 3.2% of the variance. Therefore, even after controlling for income and gender, more behavioral conduct competence in middle childhood, $\beta=-.52$, $t(187)= -2.48$, $p<.05$ demonstrated a negative relationship with

suicide-related ideations and behaviors in high school such that as behavioral conduct competence increases the rate for suicide-related ideations and behaviors.

Table 10:

Regression Coefficients for Behavioral Conduct Self -Competence and Suicide-Related Ideations and Behaviors with Income and Gender as Confounds

	Unstandardized Coefficients		Standardized Coefficients		
Model	***B***	***SE***	***β***	***t***	***p***
Step 1					
Constant	2.09	.27		7.83	<.001
Sex	-.80	.35	-.02	-.23	.82
Income	1.97	.00	.03	.37	.71
Step 2					
Constant	3.70	.70		5.29	<.001
Sex	-.30	.35	-.07	-.84	.40
Income	2.10	.00	.03	.40	.69
HSCS-Behavioral Conduct	-.52	.21	-.18	-2.48	.01*

Note. R^2= .00 for Step 1: Change in R^2=.03 for Step 2 ($p<.05$).

In summary, these results demonstrated, that overall, when gender is added to the model with income as a covariate, there does not appear to be any significant change in the variances with the outcome variable (the summed score of suicide-related ideations and behaviors). Results appear to essentially be the same. However, it should be noted these results appear to differ with the trends seen in the literature. In order to determine if gender played any role in adolescent's prevalence rates of suicide with this sample, further analysis was conducted which separately compared the effects of gender on each of the five YRBS questions about suicide.

One-way analyses of variance were conducted to evaluate the relationships between gender and questions one through three of the YRBS survey and the outcome

variables of suicide-related ideations and behaviors. Significant relationships are displayed in Table 10. Gender was found to be significantly associated with question 1 on the YRBS survey ("During the past 12 months, did you ever feel so sad or hopeless almost every day for 2 weeks or more, in a row, that you stopped doing usual activities"), $F(1,677) = 42.35$, $p<.05$. Girls ($M = 0.34$, $SD = 0.47$) endorsed question 1 more frequently than boys. Gender was also found to be significantly associated with question 2 on the YRBS survey, ("During the past 12 months, did you ever seriously consider attempting suicide?") $F(1,683) = 6.17$, $p<.05$. Girls ($M = 0.09$, $SD = 0.29$) endorsed question 2 more frequently than boys. Additionally, gender was found to be significantly associated with question 3 on the YRBS survey, ("During the past 12 months, did you make a plan about how you would attempt suicide?") $F(1,683) = 9.09$, $p<.05$. Girls ($M = .08$, $SD = 0.27$) endorsed question 3 more frequently than boys.

Therefore, it appears gender differences do exist and are consistent with the literature stating females engage in ideating behaviors more frequently than males.

Table 11:

Significant Relationships between Gender and Suicide-Related Ideations and Behaviors

	SS	df	MS	F
Question 1 and Gender (N=679)				
Between Groups	7.41	1	7.41	42.35*
Within Groups	118.51	677	.18	
Total	125.93	678		
Question 2 and Gender (N=685)				
Between Groups	.39	1	.39	6.17*
Within Groups	43.38	683	.06	
Total	43.78	684		
Question 3 and Gender (N=685)				
Between Groups	.50	1	.50	9.09*
Within Groups	37.17	683	.05	
Total	37.66	684		

Note. Questions 1-3 are from the YRBS Survey. *p < .05.

CONCLUSION

Chapter Four presented the results for the descriptive statistical data and the inferential analyses conducted to examine the hypotheses of the current study. Multiple linear regression analyses were performed to test the four hypotheses proposed in the current study. Binary logistic regression analysis further examined the predictive utility of the independent variables on specific behaviors. Post-hoc analysis was conducted to determine gender's role. In general, the hypotheses accounted for a very small amount of variance. Specifically, it was found that social connectedness, as well as a dimension of behavioral conduct self-competence, and global self-worth was significantly and negatively related to participant's engagement in suicide-related ideations and behaviors

in high school when controlling for socioeconomic status, however, these results were not robust. It was also found that the set of predictors taken together could not reliably distinguish whether a student would report seriously considering suicide or planning suicide in high school. The results will be further discussed and interpreted along with implications in Chapter Five.

CHAPTER FIVE: DISCUSSION

OVERVIEW

Suicide in adolescents is increasingly becoming a major health concern. Data from a 2009 national community based sample of high school students indicate that almost 14% of high school students ideate about suicide, 11% make a plan, 6% attempt suicide and almost 2% of students require medical attention following a suicide attempt (CDC, 2009). These numbers confirm the belief that the transition into adolescence marks a vulnerable time for engaging in suicidal ideations and behaviors. The literature on adolescent suicide has focused on the risk factors associated with social, family, personal, and environmental stressors that can lead to adolescents initiating suicidal ideations and behaviors (Fergusson et al., 2000; Bridge et al., 2006). The present study not only inspected the predictive risk factors associated with an increased risk in suicidal ideations and behaviors such as SES and temperament but also examined the predictive relationship among protective factors such as social connectedness and self-competence. Furthermore, the present study set out to predict relationships through longitudinal research beginning in middle childhood grades 4th through 6th.

In Chapter Five, the results of the study are addressed and interpreted. In addition, this chapter includes a restatement of the study's purpose, implications of the findings, and limitations of the study. Finally, recommendations for future research are discussed, as well as final comments regarding this dissertation.

RESTATEMENT OF PURPOSE

The purpose of the current study was to explore the relationship of variables measured in middle childhood in determining the predictive utility on high school prevalence of suicide ideations or behaviors. The variables of family socioeconomic

status, child social connectedness, parental ratings of child temperament, and child perceptions of self-competence were measured from a community sample in central Texas. The study intended to provide further knowledge about the link between risk and protective factors that contribute to risk of suicide ideations and behaviors of high school adolescents. Furthermore, the study endeavored to explore further the importance of measuring the risks and protective resources at an earlier developmental stage of middle childhood. Results from the current study are intended to inform the development of age-appropriate interventions for schools and communities.

DISCUSSION OF PRELIMINARY FINDINGS

Prevalence of suicide-related ideations and behaviors

Based on the review of the literature, the current study is the first of its kind to examine risk and protective measures administered in middle childhood and the odds of suicide-related ideations and behaviors in high school among a community sample in central Texas. In general, little support was found for the primary study hypothesis in the present study. Among the sample as a whole, adolescents in central Texas reported lower base rates of suicide-related ideations and behaviors among compared to a national sample from 2009. This study found that approximately 24% of adolescents felt sad or hopeless for two weeks or more, consistent with the national sample reporting at 26%. The remainder of the suicide items on the YRBS related to ideation, planning, attempting, and attempts that resulted in injury. Again, central Texas adolescents reported lower rates of these suicide-related ideations and behaviors compared to the national sample. As anticipated, based on the literature, the prevalence rates of depression, ideating about suicide and making a plan for suicide were significantly higher for girls than that of boys

as evident in Table 10. The preceding section will discuss and summarize the findings of the primary study hypotheses.

Socioeconomic status in middle childhood as a predictor of high school suicide-related ideations and behaviors

There was no support for the expected Hypothesis 1 stating a significant association between socioeconomic status reported in middle childhood and suicide-related ideations and behaviors reported in high school. The lack of association departs from theory and might be reflective of the use of inadequate measure to identify true socioeconomic status. The measuring tool for socioeconomic status (Appendix D) in the present study required parents to write in their annual income. The literature points to strengths and weaknesses of utilizing this modality for determining socioeconomic status. One of the weaknesses includes higher nonresponse rates of participants and that it is unstable over time (Shavers 2007). As discussed in Chapter Three, there exists other ways of measuring socioeconomic status. Other information such as occupation or mother's education level may have been a more superior measurement.

Temperament as a predictor of high school suicide-related ideations and behaviors

The second hypothesized association between a difficult childhood temperament and suicide-related ideations and behaviors in high school was not supported in this study. The domains of approach/withdrawal and negative-reactivity temperament, measure in middle childhood, did not significantly predict the prevalence of reported suicide related ideations and behaviors in high school. The lack of any significant associations in regards to temperament does not add to the literature base; however, the other dimensions of temperament (task persistence and activity) can also be considered as risk factors of future suicide-related ideations and behaviors. Previous studies have

suggested the need for further longitudinal research to confirm the contribution temperament has to suicidal ideations and behaviors (Brezo et al., 2006). Unfortunately this particular longitudinal study focusing in the area of personality and temperamental factors' influence on adolescent's susceptibility to suicidal behavior is inconclusive in determining the existence of any such relationship.

It might be useful to consider co-occurring factors such as psychological stability and psychiatric diagnoses when trying to understand the lack of association between risk and protective variables and suicide related ideations and behaviors in high school.

Social Connectedness in middle childhood as a predictor of high school suicide-related ideations and behaviors

The results from the present study were minimally supportive of Hypothesis 3, stating higher levels of social connectedness, as measured in middle childhood, would be predictive of lower levels of suicide related ideations and behaviors reported in high school. Presented in Table 4, social connectedness was statistically significant and accounted for approximately 2.3% of the variance in suicide-related ideations and behaviors after controlling for socioeconomic status. These results suggest a weak link between social connectedness in childhood and the prevalence of suicide-related ideations and behaviors in high school. The research on social connectedness indicates that feeling socially connected in childhood is suggestive of children believing their parents, friends, other family members, and other adults care for them. Social connectedness is thought to reflect the manner in which the child copes with negative situations (Frydenberg & Lewis, 1993).

The present study's findings are negligible and do not add to the potency from prior research. Previous studies suggest that being socially connected protects young adults from medically serious suicide attempts (Donald et al., 2004). While the literature

review presented for the current study suggests that the construct of social connectedness is an important factor influencing health risk behaviors in adolescence, the study's findings only modestly reflect this. The lack of a strong association may be due to the fact that only one measurement of social connectedness was used. As presented in the review of the literature, social connectedness and belonging are similar constructs. Resembling social connectedness, belonging refers to an individual's feeling that they are an integral member of a family, peer group, or other valued group. Hence, having a low sense of belonging is conceptualized as feeling alienated from others, and not being an integral member of a family or friend group. Chapter Two reviewed the previous research from Joiner and colleagues (2009) regarding the interpersonal-psychological theory of suicidal behavior. The theory states that a low sense of belonging among young adults in addition to perceived burdensomeness would predict the severity of suicidal ideation. Reconsidering the literature review, the interpersonal-psychological theory of suicidal behaviors (Joiner 2005) as stated in Joiner et al., (2009) affirm "that an individual will not die by suicide unless they have the desire and the ability to do so" (p. 634). Unfortunately, the findings from the current study appear to only minimally support theory that feeling socially connected in middle childhood acts as a protector factor and is similar to the feeling of belonging through young adulthood. The lack of robust findings suggests the need for further research that protect against potential multicollinearity.

Interestingly, the predictive variable of perceived social acceptance competence presented as Hypothesis 4B, did not demonstrate a statistically significant ability to predict future suicide related ideations and behaviors. Social acceptance competence measures the degree to which one has friends, feels popular, and is liked by others (Harter 1985). The results of the current study indicate that social acceptance competence approached significance at the alpha level of .05. Based on the results of Hypothesis 3,

the present study suggests that adolescents' behavior may be only minimally influenced in a positive direction when they perceive having a positive group affiliation. Self-competence in the social arena may be a protective factor against mental health issues such as anxiety, depression, and suicide-related ideations and behaviors. To support this theory, research found that adolescents, ages 11-18, who feel a positive sense of belonging within their peer group, demonstrated fewer internalizing and externalizing problems as measured by the Youth Self Report (YSR) (Newman, Lohman, & Newman, 2007). Therefore, at first glance the constructs of social connectedness and social acceptance competence seem similar. However, it can be inferred based on the present study's findings that social acceptance competence highlights the child's sense of belonging to their valued social and peer group. The lack of statistically significant findings could be attributed to the issue of multicollinearity and redundancy in measuring constructs of social connectedness and social acceptance competence in childhood.

Global Self-Worth in middle childhood as a predictor of high school suicide-related ideations and behaviors

Child ratings of their own global self-worth were demonstrative of a weak association. The results presented in Table 5 notes that after controlling for socioeconomic status, global self-worth accounted for only 1.8% of the variance in suicide-related ideations and behaviors status. According to Harter (1985), global self-worth measures how happy children are with themselves. Previous research studying college students found that self-competence can be conceptualized as a distinct dimension of global self-esteem (Tafarodi & Swann, 1995). In this study self-competence was defined as having an overall sense of feeling capable, effective, and in control. According to Cappuzzi and Gross (2008) self-efficacy is also considered a protective factor against suicidal behaviors. Self-efficacy is related to a perceived ability

to cope with problems or difficult situations. This type of attitude can ultimately protect against suicidal ideations and behaviors (Tafarodi & Swann, 1995) and even boost self-esteem. On the other hand, research has reliably shown that low self-esteem is considered an interpersonal risk factor linked to suicidality in youth (Lewinsohn et al., 1994; Groholt, Ekeberg, Wichstrom, & Haldorsen, 2000). Furthermore, research by Wild and colleagues (2004) has also shown that low self-esteem especially in the context of family relationships was significantly associated with suicidal ideations and attempts after controlling for depression. The findings of the current study minimally contribute to this research and support the theory suggesting that perceived self-competence in childhood may be a potential protective factor against suicide related ideations and behaviors in high school.

Behavioral Conduct Competence in middle childhood as a predictor of high school suicide-related ideations and behaviors

The current study also found a weak but statistically significant relationship between children's positive self-ratings of their behavioral conduct competence and adolescent suicide-related ideations and behaviors. The results presented in Table 6 indicate that behavioral conduct competence accounted for 2.7% of the variance in suicide-related ideations and behaviors while holding socioeconomic status constant. Behavioral conduct competence was a measure of how the child perceives he or she gets in trouble and does the right thing. The results of the current study are consistent with theory that suggests there is a link between youth at a high risk for suicide and low levels of behavioral conduct competence. Literature evidence states that conduct disorder behavior has been associated with increased suicidal risk especially among boys (Pfeffer, Solomon, Plutchik, Mizruchi, & Weiner, 1982). Further supportive, research among 13-18 year old adolescents; boys categorized at a high risk for suicide reported highly

elevated Internalizing and Total Problem Behavior. As part of the study, the adolescents completed the Youth Self-Report and Profile (YSR) which is a measure of competence and behavioral problems in youth. Surprisingly, the findings from this research also concluded that both boys and girls reported equal levels of Aggressive and Delinquent Behavior which disproves the gender roles (Ritter, 1990). The majority of literature has concentrated on the links of risk factors among adolescents, the purpose of the current study was to go beyond prior research and determine predictive links of risk suicidality with a younger age group. The current study's results highlight the importance of further research which would continue to examine the effects of negative behavioral conduct in grade school.

Differences by gender

The aim of the present study was to look at specific variables of socioeconomic status, temperament, social connectedness, and competence measured in childhood to determine a predictive relationship with suicide-related ideations and behaviors in high school. The review of previous research noted differences in gender as it relates to suicide-related ideations and behaviors. While initially gender was not an area of interest for the present study, further exploratory analysis was conducted to better define the impact of gender on suicide-related ideations and behavior.

Presented in Table 10, the results of the present study indicate there are differences in gender among specific suicide-related ideations and behaviors with girls reporting higher rates than boys of depression, suicidal ideation including ideating about a plan. However, when gender was included as an additional covariate variable (with income) to the regression model, the results were equivalent to the results presented when only income was the covariate in the model. The results demonstrated weak associations,

with minimal variance, existed with the variables of social connectedness, global self-worth, and behavioral competence and suicide-related ideations and behaviors when controlling for socioeconomic status and gender.

STUDY IMPLICATIONS

Previous research has suggested that longitudinal studies especially with younger populations, such as in this study, are useful to answering questions to determine how many students with suicidal tendencies exhibit risk factors in childhood such as temperamental traits (Brezo et al., 2006). Ultimately the goal of this research is to assist clinicians with developing better risk assessments at a younger age. Suicidal adolescents were once children and may have developed an at-risk profile beginning in childhood. As Capuzzi and Gross (2008) suggest a child in elementary school may already be demonstrating signs of traits or risk behaviors that would put them at an elevated risk for suicide-related ideations and behaviors. It is during this time in elementary school when interventions may be more efficacious.

Additionally, the findings from the current study can be utilized by schools to develop focused, evidenced-based mental health plans that address prevention programs geared toward boosting protective factors and targeting risk factors at a much earlier age. In examining the effects of school-based interventions, research shows that the allocation of funds should be restructured to focus more on targeting at-risk populations as opposed to targeting everyone (Mazza,1997). Targeting the at-risk students would ensure that appropriate assessments and programs were used. There needs to be more research on the effectiveness of suicide prevention programs as an evidenced based practice.

In terms of the practical implications, the results suggest weak relationships between the predicted variables and suicide-related ideations and behaviors. With

minimal statistical significance the results are limited in terms of their practical meaning. The lack of power in the relationship suggests the need for further research. Still, identifying protective factors in middle childhood may help to recognize those children at heightened risk of suicide related ideations and behaviors before they reach high school and thus provide further insight for targeting these at risk children for intervention purposes. Approaches to prevention can concentrate on boosting protective resources on an individual, family, school, and community level.

STUDY LIMITATIONS

The results of the current study should be considered in light of several limitations. Firstly, the effect sizes were small and the current study was based on a cohort-sequential sample which indicates that no causal relationships can be determined with certainty. Therefore, it is erroneous to state that the findings as causing adolescent suicide related ideations and behaviors but rather it can only be stated that the statistically significant associations are not exact. The current study did not control for age or ethnicity even though those measures were collected and available to examine as part of the final dataset. Furthermore, the present study did not initially control for gender which also may have had some impact on the findings.

Another consideration of these study findings focus on the lack of clarity when operationalizing suicidal behaviors of youth. The conceptual model of suicide is nebulous at best. Methodological problems have often plagued the adolescent suicide literature and therefore "best practice" recommendations are difficult to make without more scientific rigor and better screening processes (Rudd, 2004). Similarly, the data for the current study were not collected for the purposes of screening for suicide but rather analyzed once the surveys had been completed. Therefore, the five questions pertaining

to suicide on the YRBS survey did not capture a wide range of suicidal behaviors occurring among these adolescents. Suicidal behaviors relevant to suicidal ideation include behaviors such as self harm. Within the literature there exists confusion on defining the actual problem behavior (Miller & Taylor 2005). Along those same lines, the current study was not able to control for the mental health history of the participant or their family mental health history which research states is one of the highest risk factors for suicide (Capuzzi & Gross, 2008; Bridge et al., 2006; Donald et al., 2006; Andrews & Lewinsohn, 1992). Additionally, the present study did not collect clinical and detailed information regarding the severity of the suicide attempts for those students who reported needing medical attention.

Another limitation was related to the decision for the current study not to examine the role of ethnic identity on adolescent suicidal behaviors. The CDC found that Latina females have higher rates of attempting suicide compared to their African American and White counterparts both male and female (2009; Duarte-Velez & Bernal, 2007; Zayas et al., 2005). Research suggests that cultural factors such as the desire to keep harmonious relationships with parents and elders contribute to internalizing distressing problems and put Latinas at higher risk for suicidal behaviors (Kuhlberg, Pena, & Zayas, 2010). For the current study, there was little report on psychological/social variables relevant to minority issues like acculturation, acculturative stress, perceived discrimination, or barriers to mental health services, however there was a measure that asked parents to identify ethnic which was not examined in statistical analysis.

It should also be noted that except for parent ratings of childhood temperament and family socioeconomic status, the current analysis was based on self-report measures. The methodological procedures were designed to keep the student's answers confidential except in the case of the five questions on the YRBS survey concerning suicide it may

have hindered the number of returned surveys because positive responses to those questions meant that the student's parents were going to receive a phone call from a member of the research team to keep them informed that their child endorsed one or more of the YRBS suicide-related questions. Consequently, students may not have been completely honest when answering these questions or purposely left them blank in order to avoid their parents being told of any psychological distress. The research suggests that overall students are honest in reporting health behaviors on YRBS (http://www.ruralpartnerships.org). However, the substantial amount of missing data, 88% for the present study, suggests that perhaps there was some hesitancy in answering the questions. Therefore, respondents were excluded from the analysis due to non-response on the YRBS section asking about suicide.

Perhaps the most influential limitation for the current study relates to the large percent of missing data due to various factors. Research suggests that one of the problems with longitudinal studies focuses on retaining the sample especially when working with children and adolescents under parental guardianship. Maintaining the original sample is crucial because of the social and maturational implications that could result from the research. The literature suggests that attrition rates for adolescents participating in substance abuse longitudinal studies at school ranges from 19% to 94% (Stephens, Thibodeaux, Sloboda, & Tonkin 2007). In a study measuring adolescent attrition rate for a substance abuse prevention evaluation, researchers were only able to retain approximately 55% of the original sample (Stephens et al., 2007). The current study followed several guidelines outlined from prior research that are thought to help minimize attrition, including providing incentives, tracking demographic data at each time point, and even using web based resources to track participants (Stephens et al., 2007). Those families that were considered "drop outs" over the years could be

illustrative of families characterized by more disorganization and or problems within the family dynamic and had this information been available it could have contributed to the overall outcome data.

Furthermore, the length of the questionnaire could have played a factor in the attrition rate as the DHBMA survey (the high school participant's questionnaire) totaled 25 pages. Yet another factor affecting attrition rate could be related to the data collection methodology. As reviewed in Chapter Three, once the grade school participants entered high school, the questionnaires could no longer be administered at school and instead packets of surveys were mailed home to the families or home visits were scheduled, thus making it difficult to track participants over the years adding to the theory that these families were inherently more disorganized.

FURTHER RECOMMENDATIONS FOR FUTURE RESEARCH

The current study was exploratory in nature and requires further in-depth analysis of the relationships of protective and risk factors and future suicide related ideations and behaviors. In a review of Goldston's text (2003), on measuring suicidal behavior in adolescents, Rudd (2004) states, that the research falls short in the areas of precision and consistency when defining suicide as a construct. Future research should also aim to improve the manner in which adolescent suicidal behavior is conceptualized and defined.

More in-depth questions about suicide should be considered when developing research to measure the prevalence and severity of suicide-related ideation and behaviors in high school. Consequently, replication of aspects of the current study may choose to do further in depth data gathering when determining whether a high school student is truly considered suicidal. That would mean large, time consuming studies where perhaps students are subjected to thorough clinical interviews by trained professionals. The

current study brings up unique questions about differences between children's perceived social connectedness and social acceptance. Future research should address the specific focus on teasing apart these constructs and identifying the context by which they might have more of an influence.

The relationship detected in the current study between being socially connected in middle childhood and engaging in suicide-related ideations and behaviors in high school suggests that further precise research is needed to investigate the mechanisms through which social connectedness protects children from engaging in suicide related ideations and behaviors once they reach high school.

The findings of this study reinforce the need to focus on fostering protective factors against suicide related ideations and behaviors in middle school. These findings also contribute to the body of research that is focused on developing focused interventions for adolescent suicidal behaviors.

APPENDIX A: DHBMA CHILD ASSENT

IRB APPROVED: 01/04/2007 ***APPROVAL EXPIRES: 09/07/2007***

IRB#2006-06-0104

Informed Consent to Participate in Research
The University of Texas at Austin

You are being asked to participate in a research study. This form provides you with information about the study. The Principal Investigator (the person in charge of this research) or his/her representative will provide you with a copy of this form to keep for your reference, and will also describe this study to you and answer all of your questions. Please read the information below and ask questions about anything you don't understand before deciding whether or not to take part. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You will be one of 1186 participants in the study.

Title of Research Study: *Developing Health Behaviors in Middle Adolescents*

Principal Investigator:
Donna Lynn Rew, Professor, School of Nursing; 512-232-4784

Funding source:
National Institutes of Nursing Research [funding pending]

What is the purpose of this study? *To determine how health-risk and health-promoting behaviors develop in middle adolescence.*

What will be done if you take part in this research study?
The adolescent's parent will be asked to complete a short survey one time only. The adolescent will be asked to complete a longer survey once each year for a total of 4 years (through high school).

The Project Duration is: 5 years

What are the possible discomforts and risks?
There are minimal risks for participating in this study. There may be risks that are not known at this time, including loss of confidentiality. Since researchers will be coming into your home, there is the slight risk that the researcher may observe things that you wish to remain private. Some of the questions the adolescent is asked will pertain to sensitive behaviors and may make him or her uncomfortable or anxious. He or she does not have to answer any questions if they make him or her uncomfortable. There are 5 questions on the adolescent's survey that address thinking about, planning, or attempting suicide. If the adolescent answers these questions positively, the researcher will inform the parent and refer them to a community professional with experience in this area. Resources you may wish to contact are the Austin-Travis County Mental Health Hotline (512-472-4357) or the National Suicide Prevention Lifeline (1-800-273-8255). Both of these contacts speak Spanish. If you wish to discuss this issue or any other risks you may experience, you may ask questions now or call the Principal Investigator listed on the front page of this form.

What are the possible benefits to you or to others? *There are no direct benefits to you for participating in the study. It may benefit you and your adolescent child by raising your awareness about stress and resources for coping with stress. You both may benefit from discussing your*

participation in the study. In the event your adolescent child has thought about, planned, or attempted suicide within the previous year, both of you may benefit from having this information disclosed and being referred for professional help.

If you choose to take part in this study, will it cost you anything? *The only cost to you and your adolescent child for participating is the time it takes for you to complete the surveys.*

Will you receive compensation for your participation in this study? *You and your adolescent child will receive a $25 gift card for each survey completed.*

What if you are injured because of the study?
There is no known reason why you or your adolescent child would be injured while completing the surveys. The University has no plan to provide compensation for a physical or psychological injury incurred while completing the surveys.

If you do not want to take part in this study, what other options are available to you? *Your participation in this study is entirely voluntary. You and your adolescent child are free to refuse to be in the study, and your refusal will not influence current or future relationships with The University of Texas at Austin.*

How can you withdraw from this research study and who should you call if you have questions?
If you wish to stop your participation in this research study for any reason, you should contact the principal investigator: Donna Lynn Rew at (512) 232-4784. You should also call the principal investigator for any questions, concerns, or complaints about the research. You are free to withdraw your consent and stop participation in this research study at any time without penalty or loss of benefits for which you may be entitled. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

In addition, if you have questions about your rights as a research participant, or if you have complaints, concerns, or questions about the research, please contact Lisa Leiden, Ph.D., Chair, The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, or the Office of Research Compliance and Support at (512) 471-8871.

How will your privacy and the confidentiality of your research records be protected?
All data will be linked with a code number. Your names will be removed from the data and a list of code numbers and names will be kept in a locked file in the investigator's research office at the School of Nursing. If the researchers should observe or receive reports of child abuse, including sexual abuse, confidentiality will be broken because state law requires the reporting of abuse to Child Protective Services or the Texas Department of Family and Protective Services.

If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, then the University of Texas at Austin will protect the confidentiality of those records to the extent permitted by law.

IRB APPROVED: 01/04/2007 ***APPROVAL EXPIRES: 09/07/2007***

To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose any information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. We will use the Certificate to resist any demands for information that would identify you. This Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of Federally funded projects or for information that must be disclosed to meet requirements of the Federal Food and Drug Administration. You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an employer, insurer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The researchers do not intend to voluntarily disclose any information provided by you as part of this study.

Because this research is sponsored, the National Institutes of Health will also have the legal right to review your research records. When the results of this research are published or presented at scientific meetings, your identity will not be disclosed.

Will the researchers benefit from your participation in this study? *The only benefits to the researchers are the opportunities to publish and present the findings.*

Signatures:

As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:

_____

Signature and printed name of person obtaining consent **Date**

You have been informed about this study's purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights.

_____

Printed Name of Subject **Date**

_____

Signature of Subject **Date**

_____

Signature of Principal Investigator **Date**

Appendix B: DHBMA INFORMED CONSENT

IRB APPROVAL: 01/04/2007 ***APPROVAL EXPIRES: 09/07/2007***

A. Parental Consent Form for the Participation of Children: Selected Elements
(Use this in conjunction with the consent form 1 or 2.)

CONSENT FORM
Developing Health Behaviors in Middle Adolescence

You are being asked to allow your child to participate in a research study. This form provides you with information about the study. The person in charge of this research will also describe this study to you and answer all of your questions. Please read the information below and ask any questions you might have before deciding whether or not to take part. Your participation is entirely voluntary. You can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You can stop your participation at any time and your refusal will not impact current for future relationships with UT Austin or participating sites. To do so simply tell the researcher you wish to stop participation. The researcher will provide you with a copy of this consent for your records. There will be 1186 children participating in the study.

The purpose of this study is to determine how health-risk and health-promoting behaviors develop from childhood through adolescence.

If you agree to be in this study, we will ask your child to do the following things:
- Complete a survey once each year during the 4 years in high school.
- We will also ask one of the parents to complete a short survey one time only.

Total estimated time to participate in study is 1.5 hours per year for your child and 20 minutes for a parent in the first year only.

Risks of being in the study are minimal:
- Participating in this study may involve risks that are currently unforeseeable. If you wish to discuss the information above or any other risks your child may experience, you may ask questions now or call the Principal Investigator listed on the front page of this form.
- Since researchers will be coming into your home, there is the slight risk that they may observe things that you wish to remain private.

Benefits: There are no direct benefits to your child for participating in the study. Potential benefits of being in the study are that answering the questions may increase your adolescent child's awareness about stress and behaviors that increase or decrease these feelings. Participation may also benefit both the adolescent and parent if the child is thinking about attempting suicide.

Compensation:
- The parent and the adolescent child will each receive a $25 gift card for each survey completed.

Confidentiality and Privacy Protections:
- Neither your name or that of your adolescent child will be kept with the data. This information will be kept in a locked file, separate from the data.
- If the researchers observe or receive reports of child abuse, including sexual abuse, confidentiality will be broken because state law requires reporting of abuse to Child Protective Services or the Texas Department of Family and Protective Services.
- If your adolescent child responds positively to any of the questions about suicide, indicating that s/he has seriously thought about, planned, or attempted suicide, the researcher will immediately notify the child's parent and offer additional information about community resources.
- The data resulting from your participation may be made available to other researchers in the future for research purposes not detailed within this consent form. In these cases, the data will contain no identifying information that could associate you with it, or with your participation in any study.

- To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose any information that may identify you, even by a court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings. We will use the Certificate to resist any demands for information that would identify you. This Certificate cannot be used to resist a demand for information from personnel of the United States Government that is used for auditing or evaluation of federally funded projects or for information that must be disclosed to meet requirements of the Federal Food and Drug Administration. You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an employer, insurer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information. The researchers do not intend to voluntarily disclose any information provided by you as part of this study.

The records of this study will be stored securely and kept confidential. Authorized persons from The University of Texas at Austin, members of the Institutional Review Board, and (study sponsors, if any) have the legal right to review your child's research records and will protect the confidentiality of those records to the extent permitted by law. All publications will exclude any information that will make it possible to identify you as a subject. Throughout the study, the researchers will notify you of new information that may become available and that might affect your decision to remain in the study.

Contacts and Questions:

If you have any questions about the study please ask now. If you have questions later, want additional information, or wish to withdraw your child's participation call the researchers conducting the study. If you have questions about your child's rights as a research participant, complaints, concerns, or questions about the research please contact Lisa Leiden, Ph.D., Chair of The University of Texas at Austin Institutional Review Board for the Protection of Human Subjects, (512) 471-8871 or email: orsc@uts.cc.utexas.edu.

You may keep the copy of this consent form.

You are making a decision about allowing your adolescent son or daughter to participate in this study. Your signature below indicates that you have read the information provided above and have decided to allow him or her to participate in the study. If you later decide that you wish to withdraw your permission for your adolescent son or daughter to participate in the study, simply tell me. You may discontinue his or her participation at any time.

_____
Printed Name of Adolescent

_____ _____
Signature of Parent(s) or Legal Guardian Date

"I have read the description of the study titled 'Developing Health Behaviors in Middle Adolescence' that is printed above, and I understand what the procedures are and what will happen to me in the study. I have received permission from my parent(s) to participate in the study, and I agree to participate in it. I know that I can quit the study at any time."

_____ _____
Signature of Adolescent Date

_____ _____
Signature of Investigator Date

Appendix C: YRBS SUICIDE QUESTIONS

DHBMA: Developing Health Behaviors in Middle Adolescence
Adolescent Health Questionnaire

Part I, Section 4 of 25 total sections
The next 5 questions ask about sad feelings and attempted suicide.

Sometimes people feel so depressed about the future that they may consider attempting suicide, that is, taking some action to end their own life.

1. During the past 12 months, did you ever feel so sad or hopeless almost everyday for **two weeks or more in a row** that you stopped doing some usual activities?

1 - yes
2 – no

2. During the past 12 months, did you ever **seriously** consider attempting suicide?

1 - yes
2 – no

3. During the past 12 months, did you make a plan about how you would attempt suicide?

1 - yes
2 – no

4. During the past 12 months, how many times did you actually attempt suicide?

1 - 0 times
2 - 1 time
3 - 2 or 3 times
4 - 4 or 5 times
5 - 6 or more times

5. **IF you attempted suicide** during the past 12 months, did any attempt result in an injury, poisoning, or overdose
that had to be treated by a doctor or nurse?

1 - **I did not attempt suicide** during the past 12 months
2 - yes
3 - no

Appendix D: SOCIOECONOMIC STATUS

1. Family's total annual income: $_____ per year

Appendix E: SOCIAL CONNECTEDNESS SCALE

CARING PEOPLE

Circle the number that shows how you feel.

1. How much do adults care about you?
   1 - Very much 2 - Some 3 - A little 4 – None

2. How much do school people care about you?
   1 - Very much 2 - Some 3 - A little 4 – None

3. How much do your parents care about you?
   1 - Very much 2 - Some 3 - A little 4 – None

4. How much do your friends care about you?
   1 - Very much 2 - Some 3 - A little 4 – None

5. How much do church people care about you?
   1 - Very much 2 - Some 3 - A little 4 – None

6. How much do you get upset at home?
   1 - Very much 2 - Some 3 - A little 4 – None

7. How much does your family care about you?
   1 - Very much 2 - Some 3 - A little 4 – None

8. How much does your family understand you?
   1 - Very much 2 - Some 3 - A little 4 – None

9. How much fun do you and your family have together?
   1 - Very much 2 - Some 3 - A little 4 – None

10. How much attention does your family give you?
    1 - Very much 2 - Some 3 - A little 4 – None

Appendix F: HARTER SELF-COMPETENCE SCALE

FINAL SECTION: Each sentence talks about two kinds of kids, and we want to know which one is most like you.

(1) Read the sentence.
(2) Decide which of the two kinds of kids in the sentences is most like you.
(3) Now think about this kid and decide if it is only *"sort of"* true for you or if it is *"really"* true for you.
(4) Mark the response that best fits how true this sentence is for you.

*** PLEASE SELECT **ONLY ONE** RESPONSE ***

Question 1 of 36

Some kids feel that they are very good at their school work

BUT...

Other kids worry about whether they can do the school work assigned to them.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 2 of 36

Some kids find it hard to make friends

BUT...

Other kids find it's pretty easy to make friends.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 3 of 36

Some kids do very well at all kinds of sports

BUT...

Other kids don't feel that they are very good when it comes to sports.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 4 of 36

Some kids are happy with the way they look

BUT...

Other kids are not happy with the way they look.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.
Question 5 of 36

Some kids often do not like the way they behave
BUT...

Other kids usually like the way they behave.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid
Question 6 of 36

Some kids are often unhappy with themselves

BUT

Other kids are pretty pleased with themselves.

I am really like the first kind of kid.
I am sort of like the first kind of kid.

I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 7 of 36

Some kids feel like they are just as smart as other kids their age

BUT...

Other kids aren't so sure and wonder if they are as smart.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 8 of 36
Some kids have a lot of friends

BUT...

Other kids don't have very many friends.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 9 of 36

Some kids wish they could be a lot better at sports

BUT...

Other kids feel they are good enough at sports.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 10 of 36

Some kids are happy with their height and weight

BUT...

Other kids wish their height or weight were different.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 11 of 36

Some kids usually do the right things

BUT...

Other kids often don't do the right thing.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 12 of 36

Some kids don't like the way they are leading their life

BUT...

Other kids do like the way they are leading their life.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 13 of 36

Some kids are pretty slow in finishing their school work

BUT...

Other kids can do their school work quickly.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 14 of 36

Some kids would like to have a lot more friends

BUT...

Other kids have as many friends as they want.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 15 of 36

Some kids think they could do well at just about any new sports activity they haven't tried before

BUT...

Other kids are afraid they might not do well at sports they haven't ever tried.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid

Question 16 of 36

Some kids wish their body was different

BUT...

Other kids like their body the way it is.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 17 of 36

Some kids usually act the way they know they are supposed to

BUT...

Other kids often don't act the way they are supposed to.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 18 of 36

Some kids are happy with themselves as a person

BUT...

Other kids are often not happy with themselves.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 19 of 36

Some kids often forget what they learn

BUT...

Other kids can remember things easily.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 20 of 36

Some kids are always doing things with a lot of kids

BUT...

Other kids usually do things by themselves.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 21 of 36

Some kids feel that they are better than others their age at sports

BUT...

Other kids don't feel they can play as well.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 22 of 36

Some kids wish their physical appearance (how they look) was different

BUT...

Other kids like their physical appearance the way it is.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 23 of 36

Some kids usually get in trouble because of things they do

BUT...

Other kids usually don't do things to get themselves in trouble.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 24 of 36

Some kids like the kind of person they are

BUT...

Other kids often wish they were someone else.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 25 of 36

Some kids do very well at their class work

BUT...

Other kids don't do very well at their class work.

I am really like the first kind of kid.

I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 26 of 36

Some kids wish that more people their age liked them

BUT...

Other kids feel that most people their age do like them.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 27 of 36

In games and sports some kids usually watch instead of play

BUT...

Other kids usually play rather than just watch.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid

Question 28 of 36

Some kids wish something about their face or hair looked different

BUT...

Other kids like their face and hair the way they are.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid

Question 29 of 36

Some kids do things they know they shouldn't do

BUT...

Other kids hardly ever do things they know they shouldn't do.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid

Question 30 of 36

Some kids are very happy being the way they are

BUT...

Other kids wish they were different.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid

Question 31 of 36

Some kids have trouble figuring out the answers in school

BUT...

Other kids almost always can figure out the answers.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.
Question 32 of 36

Some kids are popular with others their age

BUT...
Other kids are not very popular.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 33 of 36

Some kids don't do well at new outdoor games

BUT...

Other kids are good at new games right away.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 34 of 36

Some kids think that they are good looking

BUT...
Other kids think that they are not very good looking.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 35 of 36

Some kids behave themselves very well

BUT...
Other kids often find it hard to behave themselves.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Question 36 of 36

Some kids are not very happy with the way they do a lot of things

BUT...
Other kids think the way they do things is fine.

I am really like the first kind of kid.
I am sort of like the first kind of kid.
I am really like the second kind of kid.
I am sort of like the second kind of kid.

Appendix G: SCHOOL-AGE TEMPERAMENT INVENTORY

Using the scale below, please ***circle the number*** that tells you how often your child's behavior is like the behavior described in each sentence.

	Never 1	Rarely 2	Half of the time 3	Frequently 4	Always 5
1. Walks quietly in the house when moving from room to room.	1	2	3	4	5
2. Gets upset when he/she can't find something.	1	2	3	4	5
3. Approaches children his/her age even when he/she doesn't know them.	1	2	3	4	5
4. Switches from one activity to another before finishing the first.	1	2	3	4	5
5. When he/she disagrees, speaks in a quiet and calm manner.	1	2	3	4	5
6. Returns to responsibilities (homework, chores) after friends call or visit.	1	2	3	4	5
7. Smiles or laughs with new adult visitors at home.	1	2	3	4	5
8. Does not complete homework unless reminders are given.	1	2	3	4	5
9. Is shy with adults he/she doesn't know.	1	2	3	4	5
10. Gets mad even when mildly criticized.	1	2	3	4	5
11. Leaves own projects unfinished (drawings, models, crafts, etc.)	1	2	3	4	5
12. Seems nervous or anxious in new situations (visiting relatives or new playmates).	1	2	3	4	5
13. Runs when entering or leaving the house.	1	2	3	4	5

14.	Reacts strongly (cries or complains loudly) to a disappointment or failure.	1	2	3	4	5
15.	Gets very frustrated with projects and quits.	1	2	3	4	5
16.	Remembers to do homework without being reminded.	1	2	3	4	5
17.	Gets angry when teased.	1	2	3	4	5
18.	Quits routine household chores before finished.	1	2	3	4	5
19.	Bursts out loudly into the room when entering.	1	2	3	4	5
20.	Gets very frustrated when he/she makes a mistake.	1	2	3	4	5
21.	When meeting new children, acts bashful.	1	2	3	4	5
22.	Stays with homework until finished.	1	2	3	4	5
23.	When angry, yells or snaps at others.	1	2	3	4	5
24.	Runs or jumps when going up or down stairs.	1	2	3	4	5
25.	Goes back to the task at hand (chore, housework, etc.) after interruption.	1	2	3	4	5
26.	Moody when corrected for misbehavior.	1	2	3	4	5
27.	Moves right into a new place (store, theater, playground).	1	2	3	4	5
28.	Runs to get where he/she wants to go.	1	2	3	4	5
29.	Responds intensely to disapproval (shouts, cries, etc.).	1	2	3	4	5
30.	Has difficulty completing assignments (homework, chores, etc.).	1	2	3	4	5
31.	Prefers to play with someone he/she already knows rather than meeting someone new.	1	2	3	4	5
32.	Makes loud noises when angry (slams doors, bangs objects, shouts, etc.).	1	2	3	4	5

33.	Get upset when there is a change in plans.	1	2	3	4	5
34.	Avoids (stays away from, doesn't talk to) new guests or visitors in the house.	1	2	3	4	5
35.	Seems to be in a big hurry most of the time.	1	2	3	4	5
36.	When an activity is difficult, gives up easily.	1	2	3	4	5
37.	Has off days when he/she is moody or cranky.	1	2	3	4	5
38.	Seems uncomfortable when at someone's house for the first time.	1	2	3	4	5

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